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VOA
Chemical

Chemical Trade Journal
Supplement, July 9, 1892.]

THE

CHEMICAL TRADE JOURNAL:

A WEEKLY NEWSPAPER DEVOTED TO

The Commercial Aspect of the Chemical and Allied Industries.

EDITED BY

GEORGE E. DAVIS.

FORMERLY ONE OF HER MAJESTY'S INSPECTORS OF ALKALI WORKS.
CHEMICAL ENGINEER AND CONSULTING CHEMIST.

VOLUME X.

[JANUARY TO JUNE, 1892.]

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Notices.

Articles, reports, and correspondence on all matters of interest to the Chemical and allied industries, home and foreign, are solicited. Correspondents should condense their matter as much as possible, write on one side only of the paper, and in all cases give their names and addresses, not necessarily for publication. Sketches should be sent on separate sheets.

Readers are invited to forward items of intelligence, or cuttings from local newspapers, of interest to the trades concerned.

As it is one of the special features of the *Chemical Trade Journal* to give the earliest information respecting new processes, improvements, inventions, etc., bearing upon the Chemical and allied industries, or which may be of interest to our readers, the Editor invites particulars of such—when in working order—from the originators; and if the subject is deemed of sufficient importance, an expert will visit and report upon the same in the columns of the *Journal*. There is no fee required for visits of this kind.

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THE PAST, PRESENT, AND FUTURE.

ONCE again, as borne on the ever rolling stream of time over the threshold of another year, it falls to our lot to recall to our readers some of the more important events of the past year, whilst at the same time we are afforded the privilege of wishing them good speed for the one upon which we have just entered.

The past year for the chemical world has not been devoid of epoch-marking incidents by any means, and it is pleasing to chronicle the fact that, taken as a whole, these epochs have been characterised by their tone of prosperity rather than the reverse.

In the sphere of pure science the Faraday Centenary, in conjunction with the demonstration of the liquefaction of oxygen gas, affords an excellent illustration of the advance which science has made during the past, the fruit of which advance the year of '91 has seen brought to maturity.

In the chemical trade likewise there have been many matters of moment.

THE ALKALI TRADE

has witnessed the realization of the first dividend of the United Alkali Company, Limited, and in conjunction with the numerous auxiliaries which, like parasites, have attached themselves to this industry, ample scope has been afforded to those most closely interested, to investigate the changes, whether for good or evil, which have been effected under the new *régime*, and to compare the results which have been attained with the averred intentions with which the year just ended was commenced. Improvements have been made in the methods of production in certain branches of this trade, and ere the close of '92 doubtless each new proposal will have been put to the test which shall decide its future, and indicate its probable bearing upon the alkali trade.

GLASS, BRICK AND TILE MANUFACTURERS

have had a somewhat peaceful year, but a brisker movement has been evinced during the last few months, which augurs well for the present year. It is a sure indication that there is genuine "grit" endeavouring to foster these industries, when we glance back upon the advance which has been made during the last three years in the production of enamelled goods for use in chemical, dye, and other works. An article which then, as far as home production was concerned, was a novelty, has now become in several districts a staple production. But all the plums, however, have not fallen in one place, and

TAR AND AMMONIA DISTILLERS

have had their share of good fortune during the past twelve months. True that in the face of the present position of affairs they may feel disposed to cavil, and discount the success of the past with the misfortunes of the present; but *l'union fait la force*, and seeing that this fact has apparently been realized by the vanguard of this industry we trust that the outlook for 1892 will not be as lowering as at the close of 1891. Not so, however, we fear, will be the case with the

CALICO PRINTERS AND DYERS.

Not only is it our misfortune to notify the absence of advance, but, unfortunately, retrogression has been rife, and unless there is some determined effort made to counteract the short-sighted policy which has so long prevailed, we fear it will not be long before the nethermost position will be reached. *Facilis est Descensus.*

But let us now turn our attention to our friends

THE CHEMICAL MERCHANTS AND DRYSALTERS.

Although there has been nothing of exceptional importance in the way of improvement, at least there has been no falling off. It is especially pleasing for us to be able to notify this, as we have in some measure been instrumental in enabling our *clientèle* to maintain their position, by affording them special facilities through the medium of this journal. Likewise, whilst referring to the advances which have been made by others it may not be out of place to touch upon the efforts which we have made during the past year on behalf of

OIL REFINERS,

PAINT, COLOUR AND VARNISH MANUFACTURERS.

Already have our advances been met with appreciation, showing that our articles, extended Market Reports, and Export and Import Lists have not failed to supply a want which we believed to exist, and which it will be our constant endeavour to continue to satisfy. The prospect of the Petroleum Act becoming law caused anxiety in some quarters, but that danger, if it can be justly called one, no longer exists, and activity in the oil industry prevails. The solidification of petroleum, and its extended use as a fuel, both in the liquid and solid form, is answerable for this to some extent, and with the healthy aspect which the projected opening of the Suez Canal for petroleum traffic now bears, there would seem to be a good warranty that the firm tone will extend far into the present year.

CHEMICAL ENGINEERS

have one and all been fairly busy, and this year does not seem likely to be any worse than the last. In the matter of new processes there have been many, but the labours of the chemical engineer have increased rather than lessened. Now that something definite is to be done for the rivers of Lancashire and Cheshire, there is an open field for someone to originate a scheme which shall meet completely the requirements of the district in this matter. And now, in conclusion, we come to

OUR READERS,

who, though last, we deem by no means the least. There are many which this category includes, such as metallurgists, assayers; manure, cement, and india-rubber manufacturers, mineral merchants, and paper-makers, brewers, tanners, glue, size, and salt manufacturers, all of whom we have, during the past year, done our best to afford information and reading, which was practical rather than theoretical; bearing in mind that our special object was to foster the interests of practical business men, by introducing to them the outcome of theoretical investigations without confusing them with the details of elaboration.

Doubtless it will be noticed by our readers that we have this year departed from our former custom, and postponed our *Special Issue* till the third week in the New Year.

The object for thus changing is, having learnt that, despite the pressure of business, "Christmas is a merry time"; we found, after due consideration, that it was to the mutual advantage of both our *clientèle* and the Chemical Trade (to say nothing of avoiding the vagaries which the British artisan is so prone to at this time) to defer the Special Issue until after the rush of the Christmas holidays.

We feel, moreover, our readers will find that this issue will be one of the most interesting to one and all since the Journal was first introduced to them; and, in the meantime, we take this opportunity of expressing the hope that those who have endeavoured to strengthen their position may enjoy the benefits which should accrue, and to wish our readers collectively, both at home and abroad,

A VERY HAPPY AND PROSPEROUS NEW YEAR.

OXIDISING METALLIC ARSENIDES BY ELECTRICITY.

By LEE K. FRANKEL.

(*Continued from Vol. IX., p. 397.*)

RAMMELSBERGITE ($NiCoFe)As_2$.—With this mineral more difficulty was encountered than with any other, and the results that are given below were obtained only after seventeen attempts at decomposition had proved unsuccessful. The method used at first was the one which showed itself to be efficient for the decomposition of metallic arsenic, viz: 25-30 grams of caustic potash and a current of one ampère running for thirty minutes, with five minutes reversal at the end of the oxidation. This proved an utter failure, as the residues from the fusion showed in all cases the presence of arsenic, while the results obtained varied from 53-67 per cent. of arsenic. A former experience having shown that the non-oxidation might probably be due to the enclosure of particles of mineral on the platinum wire, a more frequent reversal of the current was tried. Using the same amount of caustic potash, and increasing the current strength from one to one and one-half ampères, the current was reversed after the first ten minutes, and allowed to run in the opposite direction for three minutes. It was then passed up through the crucible again for five minutes, then again down through the platinum wire for three minutes, the process being continued for thirty minutes. The results were altogether unsatisfactory, large quantities of arsenic being found in the residues.

The amount of caustic potash was now increased from 25-30 grams. to 40 grams., the nickel crucible used being 1⅞ inches high and 2 inches wide. In six decompositions made under these conditions, the current in the first two had a strength of one ampère, in the second two of an ampère and one-half, and in the last two it was increased to one and three-quarters ampères, the current being reversed in a manner similar to the one previously tried. The results in all cases were of a negative order, as arsenic was found in all the residues. An increase of the time limit was now tried with satisfactory results. Using forty grams. of caustic potash, the current was allowed to act for forty-five minutes. After various attempts to ascertain the best current strength for the purpose, it was found that a current that registers an ampère was the most satisfactory, and it should not be allowed to rise above this point, otherwise the decompositions are apt to be incomplete. In the oxidations given below, the current was reversed at the end of every ten minutes for three minutes. Another phase of the operation that seems to be essential, is to have the mineral in as fine a condition as possible. Using the conditions just given, the residues from the fusions showed no arsenic, though they were most carefully examined by the wet method and also before the blow-pipe. The arsenic was precipitated as magnesium ammonium arseniate and weighed as magnesium pyroarseniate in a platinum crucible, the filter being ignited separately after moistening with ammonium nitrate.

The results found were as follows: 0·1829 gram. of rammelsbergite gave 0·2598 gram. of magnesium pyroarseniate=68·76 per cent. arsenic; 0·2168 gram. of rammelsbergite gave 0·3118 gram. of magnesium pyroarseniate=69·62 per cent. arsenic.

Another sample of the mineral dissolved in nitric acid and determined as magnesium pyroarseniate gave 70·34 per cent. arsenic.

CHLOANTHITE ($NiCoFe)As_2$.—The mineral used for decomposition was a portion of the sample from Franklin, N.J., which was reported along with other minerals by Dr. Köenig, in the *Proceedings of the Academy of Natural Sciences of Philadelphia*, 1889, 184. The decompositions were made contemporaneously with those of rammelsbergite, and for this reason many of the unsuccessful steps which were made with the latter mineral were also made with the chloanthite. The first oxidations were made with a current of one ampère, using 25—30 grams. of caustic potash, and allowing the current to run for thirty minutes. As with the rammelsbergite, so here, too, only diverse results were obtained. Reversing the current every five minutes, after the first ten minutes, brought about a similar condition of affairs. The results were from five to six per cent. low. The addition of copper oxide, as recommended by Dr. Smith in the oxidation of pyrite (*Journal of the Franklin Institute*, proceedings of the Chemical Section, vol. 2, p. 62) was now tried. The quantity of caustic potash used being increased at the same time, with one sample of the chloanthite, an equal amount of copper oxide was mixed, and with another sample

double the quantity of copper oxide. The other conditions were a current of one and one-half ampères, a time limit of thirty minutes, with reversals of the current after the first fifteen minutes, and forty grams. of caustic potash. This combination of conditions gave no better results than the previous one. Satisfactory results were eventually obtained under the following conditions, the copper oxide being dispensed with entirely: The current was not allowed to register above one ampère, and the best results will be obtained if it is kept slightly below this mark. Thirty minutes was found to answer for complete decomposition, but for the sake of certainty, it is advisable to allow the current to run for forty-five minutes, reversing it during the last five minutes. The amount of caustic potash used was forty grams. The results obtained were as follows: 0·2332 gram. of chloanthite was decomposed as above. The fusion was treated with hot water and filtered. The filtrate was acidulated with hydrochloric acid, and warmed to expel the carbon dioxide present. On cooling, the arsenic was reduced with sulphurous acid, and after the expulsion of the excess of sulphurous acid, was precipitated with hydrogen sulphide in the cold. The precipitate of arsenious sulphide was filtered in a Gooch crucible, after the solution had stood until it barely had the odour of hydrogen sulphide, and washed with cold water. The crucible and its contents were then placed in a beaker, carbon disulphide added, and allowed to stand twenty-four hours. The crucible was then removed from the beaker, its contents washed with alcohol, then with cold water, and finally dried for six hours at 105° C.; 0·2710 gram. of arsenious sulphide was found = 70·84 per cent. arsenic; 0·2899 gram. of chloanthite treated in the same manner as the preceding gave 0·3325 gram. of arsenious sulphide = 69·93 per cent. arsenic.

In the sample of the mineral analyzed by Dr. Köenig and reported by him, he found 70·66 per cent. arsenic.

As will be seen from the above, accurate results were obtained by weighing the arsenic as arsenious sulphide. They are, however, but two out of a large number of determinations that were made in porcelain Gooch crucibles, and the only two which gave results sufficiently close to be utilised. The amount of sulphur precipitated with the arsenious sulphide must have been very small, otherwise the results, owing to the inefficacy of the carbon disulphide, would assuredly have been high. For this reason, the author cannot recommend the method for general use.

The residues from the fusions were carefully examined for arsenic, but none was found to be present.

SMALTITE (Co. Ni. Fe.) As^2.—From the experience gained with rammelsbergite and chloanthite, it was found very easy to oxidise the smaltite. The mineral used for the purpose was mixed with gangue, and therefore was first broken up, and the smaltite picked out as carefully as possible by hand. The resultant material, as shown by the analyses, still contained impurities. The conditions for oxidation are as follows: A current of one ampère with the restrictions imposed under chloanthite, a time limit of forty-five minutes, and forty gram. of caustic potash. Using those conditions, the oxidation is complete, the residues showing not the least trace of arsenic. The results obtained were as follows:

0·2233 gram. of smaltite gave 0·2813 gram. of magnesium pyroarseniate = 60 98 per cent. arsenic

0·1790 gram. of smaltite yielded 0·2199 gram. of magnesium pyroarseniate = 59·47 per cent. arsenic

The method of procedure resembled one already given. The fusion was acidified with hydrochloric acid, then made alkaline with ammonium hydrate, and the arsenic precipitated with magnesia solution, being finally weighed in a platinum crucible. In the latter of the two determinations, the garlic odour of arsenic was noticeable on igniting the filter paper, although it had previously been thoroughly saturated with a concentrated ammonium nitrate solution. This accounts for the slightly low result obtained, but it was not thought necessary to repeat the operation, since the residue showed that the oxidation was complete.

0 3136 gram. of the ore, dissolved in nitric acid, and the arsenic determined as magnesium pyroarseniate in a platinum crucible, gave 0·3929 gram. of magnesium pyroarseniate = 60 65 per cent. arsenic. The difference in percentage from the theoretical amount is due to the impurities in the mineral.

A study of the composition of rammelsbergite, chloanthite and smaltite will show several points of interest. It will be seen from their formulæ that they each contain two atoms of arsenic to the molecule, while niccolite, cobaltite, arsenopyrite, etc., either have one atom of arsenic to the molecule or have one atom of arsenic replaced by sulphur. Returning to the study of the conditions necessary for oxidation, it will be remembered that the amounts of caustic potash necessary, and the extents of time, were larger for the first three minerals than for any of the others, while the oxidations seem to proceed with greater difficulty. A cause for this that might be advanced is that the oxides of the metals are united with greater tenacity to two arsenic atoms than they are to one, and require a greater expenditure of force for their separation. A somewhat similar occurrence was noticed by Dr. Smith in the oxidation of the metallic sulphides. Pyrrhotite, whose formula is in all probability either $Fe_{11}S_{12}$ or FeS, is decomposed with great readiness, while pyrite, which contains two atoms of sulphur to the molecule, succumbed only after repeated and many fruitless trials. What might be considered a curious feature in the oxidation of these arsenides is the fact that those containing two atoms of arsenic to the molecule are decomposed more readily by weak currents than they are by strong ones, while with the arsenides containing but one atom to the molecule, either strong or weak currents are equally efficacious. The only explanation that there is to offer for this seeming anomaly is the one already given, viz., the enclosure of particles of metal on the platinum wire. In those arsenides containing but one atom of arsenic to the molecule the decomposition is in all probability so rapid that any enclosure of the mineral on the wire is practically impossible. In minerals like rammelsbergite and chloanthite we may assume that the decomposition proceeds by much slower stages, so that if the current is sufficiently strong to deposit metal on the cathode, there is constantly present sufficient undecomposed mineral to be enclosed in the deposited metal.

COBALTITE (Co. Fe.)As.S.—This mineral was decomposed with great ease, a result to be expected if we trace the similarity in composition between it and such minerals as gersdorfite, niccolite, etc. The conditions for oxidation are very similar to those of gersdorfite, with the difference that while, in the latter, the current was allowed to run only for twenty minutes, in the decomposition of cobaltite it ran for thirty minutes, with a five minutes reversal at the end, Otherwise the conditions for oxidation and for the subsequent decomposition of the fusion and the estimation of the arsenic are the same as for gersdorfite. The magnesium pyroarseniate was weighed in platinum Gooch crucibles, the method being very accurate, owing to the fact that there is no possibility for any volatilization of the arsenic, and more rapid than weighing in a porcelain Gooch crucible, since the platinum crucible attains a constant temperature in a very short period of time. The results obtained were as follows:—

0·1032 gram. of cobaltite yielded 0·1006 gram. of magnesium pyroarseniate = 47·2 per cent. arsenic.

0 1326 gram. of cobaltite yielded 0·1313 gram. of magnesium pyroarseniate = 47·93 per cent. arsenic

0·2250 gram. of the same ore was dissolved in nitric acid, the acid evaporated, the solution made alkaline with ammonium hydrate, and the arsenic precipitated with magnesia solution. The resultant magnesium ammonium arseniate was ignited in a porcelain Gooch crucible, and gave 0·2229 gram. of magnesium pyroarseniate = 47·96 per cent. arsenic.

(To be continued.)

THE WHITENING OF WOOL.

WE owe to M. Hofmann, of Dresden, an interesting communication on the process employed for producing a pure white on wool. It is well known that it is impossible, even by the aid of the most active bleaching agents, to remove from the wool a faint shade of yellow, which becomes specially noticeable when the material is contrasted with silk or cotton.

The neutralisation of this yellow by a complementary blue, such as is used for cotton, linen, paper, etc., only gives poor and unsatisfactory results. Attempts have long been made to give wool a better white by means of white topping substances, such as magnesium carbonate. This method has had, however, to be given up on account of the dust formed after a short period of storage

The author proposes to obtain a better result by vegetalising the wool, that is to say by impregnating it with a solution of cuprous oxide in ammonia, and then passing the fibre into a solution of sugar or dilute acid, which precipitates the cellulose in an insoluble form, and thus fixes it. To render the gelatinous cellulose thus deposited opaque and white, the material is dipped into ether.

The same result is obtained by F. V. Hallah, by the use of hyposulphite (the old hydrosulphite) of soda and indigo. The effect produced is of two kinds: the hyposulphite produces decolourisation by its energetic reducing action, and by dissolving the indigo mechanically deposited on the surface of the tissue, causes the colouring matter to penetrate uniformly into the fibre. The blue colour is restored to the indigo by a subsequent exposure to the air, and being complementary to the yellow of the wool completely destroys it. It is very doubtful whether, even under these conditions, a perfect equilibrium is attained between the yellow shade which is to be removed and the blue of the indigo. We have already observed that the numerous attempts previously made in this direction with various colouring matters, have resulted in failure. However this may be, the method, as given by the *Deutsche Farb. Zeit.* is as follows:—

The hyposulphite solution should be prepared immediately before use. For this purpose, seven parts of zinc dust, or 20 to 30 parts of granulated or sheet zinc are digested with a concentrated solution of

bisulphite of sodium, representing about 100 parts of the dry salt. The operation is carried on in a well closed vessel, which must be shaken up at intervals during an hour. The clear liquid is decanted, and contains hyposulphite of sodium, together with some of the zinc salt.

The woollen material, carefully purified, washed, and freed from fat, etc , is thoroughly moistened in a bath of cold water, in which indigo is suspended in a very fine state of division. The best quality for the purpose is that which gives bright blues of a reddish shade in the vat process. The material emerges from the bath covered over with particles of indigo deposited on the surface.

It is then passed into the bleaching solution, which is composed of water and hyposulphite solution at 1°—4° Baume. Just before passing in the material a quantity of acetic acid equivalent to the hyposulphite present is added. It is essential that the stuff be properly manipulated, so that the reduction of the indigo proceeds with perfect regularity.—*Le Mon. de la Teinture.*

THE INSTITUTE OF CHEMISTRY.

CONFERENCE ON THE ETHICS OF PROFESSIONAL CERTIFICATES.

THE second conference of the Institute of Chemistry took place on Tuesday, December 22nd, at Burlington House. It was strongly and reasonably objected that the date selected being so near Christmas was ill adapted for favouring the assemblage of members from a distance. A fog of extreme opacity added to the hostile conditions.

The ball was opened by Professor Tilden, the president, who compared himself to a colliery donkey sent on ahead of the miners, where inflammatory matter was expected to be present, with a lighted lantern tied to his head, in order that the risk of explosion for those following him might be lessened. He said that, in his opinion, it was not contrary to professional etiquette for a chemist to give a certificate reporting on a patent, a process, or a product, provided that such report was limited to an expression of fact and was free from irrelevant laudatory phrases. The vague use of terms that should be precise must also be avoided. As an instance of what he meant he quoted the word "pure," as applied to such a product as cocoa, and the application of obsolete terms based on a physiological idea now thoroughly exploded, such as "flesh producing" "heat forming," in the manner frequently adopted by some writers of objectionable certificates purporting to pass judgment upon various patented food preparations. Then again he would call attention to those certificates which were dishonest from the use of a *suppressio veri*, of which perhaps the most shocking examples were to be found in certain so-called analyses of a much advertised transparent soap, which stated the absence of free alkali with great flourish of trumpets, but omitted to mention the presence of sugar in large quantities. Certificates containing a statement put in an exaggerated form, or such as were irrelevant to the matter as far as it directly concerned the analyst, were also to be guarded against.

When one found for example a well-known member of the profession, having no fewer than eighteen letters after his name, as well as numerous other titles to confidence, certifying anent a certain proprietary tea, that it contained 43% of soluble matter, but omitting to give the percentage of caffine, one could not but think that such a statement savoured of irrelevance.

The discussion being thus opened, Mr. Carteighe and Dr. Frankland discoursed at some length concerning the questions as to when a certificate should be given and what should be its nature, both stating as their qualification to speak upon the matter, that they knew nothing about it. We shall not therefore report their remarks. Mr. Cassal got to the root of the matter by saying that the whole difficulty could be solved like many other difficulties by simply paying a little attention to the dictates of common honesty and decency. If a certificate was free from dishonest praise or omission—that is, was confined to facts and bare deductions from them, it infringed no ethical code. He enlivened the meeting by the quotation of various certificates exhibiting the reverse characteristics in marked degree. We shall probably emphasise the point of Mr. Cassal's remarks by appending the following matchless example, fictitious no doubt, but none the less typical on that account :—

Buy the "Gentleman's Joy."

Smoke the "Gentleman's Joy."

"Gentleman's Joy" is the only tobacco for train use.

Invaluable to commercial gentlemen.

"Gentleman's Joy" will make the stoutest female leave at the next station.

The "Gentleman's Joy" is pungent and penetrating. It is not deleterious to health, in spite of its exasperating smell.

The "Gentleman's Joy" is adapted for any pipe, but is more effective in a blackened "cutty."

"Traveller" writes : "Its effect is marvellous. I have never met but one lady who could stand it, and she was evidently afflicted with a severe cold."

"Mirogymist" says : "Send me a ton of your excellent 'Gentleman's Joy.' All down my line ladies' compartments are now fully occupied."

Professor Stinks, F.C.S., has made the following report : "I have analysed the submitted sample of 'Gentleman's Joy.' This tobacco is quite the strongest in the market. It is rich in sulphuretted hydrogen gas, and its constant use in a closed compartment must be fatal to females. In fragrance it is superior to dust-carts, the lower Thames, the Underground Railway, and the city of Cologne."

Mr. Hehner, in an excellent speech, pointed out that members of the medical profession were worse sinners in the matter of giving florid certificates than were chemists. There was reason in the practice of getting qualified chemical opinion even for advertising purposes. If, for example, it was desired to make known to the general public that a certain "ale" was non-alcoholic, it was surely better that this property should be proved by subjecting it to distillation, than that an unfortunate teetotaller should consume large quantities of it, with the view of ascertaining its physiological effect upon himself.

A tolerably lengthy discussion by various members followed, in the course of which Mr. B. E. R. Newlands related anecdotes of the raciest description, but the only point at once novel and useful raised was one due to Dr. Rideal, who urged that the debate alone would be practically fruitless unless action were taken by the Institute to supervise and regulate in some manner the drawing up of certificates, and to punish those who overstepped the limits observed by all who respected themselves and their profession.

PRODUCING CYANOGEN FROM GAS.

BY W. LEYBOLD.

THE coal employed for the manufacture of gas usually contains about 1·2% of nitrogen, more than half of which is completely lost ; it is found that 100 parts of nitrogen contained in the coal are distributed as follows among the products of distillation :—

Coke	31-36 %		
Ammonia	10-14		
Ferrocyanide	1·5-2	Deficit.....	46·56%
Tar	1-1.3		

The missing nitrogen is in the gaseous state, mixed with the illuminating gas, which may contain as much as 3·5% of it when it has been made at a very high temperature. Now, this loss is not without importance, for nitrogen is worth about seven times as much in ferrocyanide as in ammonia. The cyanogen in the crude gas owes its origin to ammonia. When an indifferent gas, such as hydrogen, is mixed with ammonia and passed over red hot coke, the presence of cyanogen—absorbable by dilute caustic potash—can be detected in the resulting gas ; simultaneously with this the ammonia is decomposed into nitrogen and hydrogen, so that when the amount of ammonia passed through is small, hydrocyanic acid and not ammonium cyanide is found. With a sufficiently slow current of air, and a high temperature, about 0·5-0·8% of the ammonia employed can be converted into cyanogen. In practice, this transformation should be more complete, because the contact of the ammonia with the coal is more prolonged than in a laboratory experiment. Bunte has actually succeeded in showing that the ratio of nitrogen as cyanogen, to nitrogen as ammonia may rise to one-third.

In the gas, the cyanogen is chiefly present as ammonium cyanide, but in order to determine the amount, a suitable method of analysis must be found, since the processes usually employed, by means of silver salts, calomel, and the action of palladious chloride and sulphur dioxide on mercury cyanide, are not very satisfactory in the presence of sulphur or tar.

For this purpose the transformation of cyanogen into ferrocyanide in an alkaline solution, in presence of a ferrous salt, has been utilised. A measured volume of the gas is passed into a mixture of caustic soda and ferrous sulphate, dissolved in water, the mixture being contained in the wash bottles, and the ferrous hydrate being in suspension.

After the passage of the gas, sulphide of iron and sodium ferrocyanide are present. The liquid is boiled for quarter of an hour to complete the transformation into ferrocyanide, filtered, and made up to half a litre.

A fractional part of this solution is treated with ferric chloride, which precipitates Prussian blue. The latter is separated by filtration, treated by caustic soda, the liquid filtered, acidified with sulphuric acid, reduced with zinc, and titrated with permanganate (Moldenhaun and Leybold's method, *Moniteur Scientifique*, 1890, 200). The cyanogen is thus completely absorbed, for no ferrocyanide is found in the third wash bottle, and only very little in the second.

ABSORPTION OF THE CYANOGEN.—The gas leaving the retorts contains ammonium cyanide. A small fraction of this substance in presence of a large excess of ammonium sulphide is converted into sulpho-cyanide; ammonium cyanide and hydrocyanic acid being able to dissolve iron, a little ferrocyanide is found in passing through the iron pipes.

In the condensers very little cyanogen is retained, in spite of the ready solubility of ammonium cyanide; this salt, being decomposed by the carbon dioxide of the gas, is replaced by an almost equivalent quantity of hydrocyanic acid, which escapes condensation.

The following tables show the progressive elimination of the cyanogen:—

Samples.	HCN in grms. per 100 cubic metres. I.	II.	HCN retained per cent. I.	II.
Main	265·9	203 4	5·4	14·57
After the scrubber	251·6	173·6	45·09	—
After 1st purifier ..	131·7	—	18 20	56 15
After 2nd purifier ..	83·3	59·5	8 16	—
After 3rd purifier ..	61·6	,, ...	—	—
In the gasometer ..	51·2	19·8	15·50	9·73

AMMONIA.

	NH_3 in grams. per cubic metre.	NH_3 retained. per cent.
Main	396·6	17·88
After condenser	325·7	81·16
After the tower	3·8	0·96
After the purifier	Traces.	

SULPHURETTED HYDROGEN.

	H_2S in vols. per cent.	H_2S retained per cent.
Main	1·38	20·29
After condenser	1·10	3·02
After tower	1 05	76·09
After 1st purifier	Traces.	

It will be seen that the proportion of cyanogen retained in the purifiers is 56% with two, and 71% with three. Consequently, the greater the number of purifiers the larger the amount of cyanogen collected. It will even be of advantage to employ a very long purifier as the first, which will still be able to act on the gas freed from sulphur; by increasing the dimensions of this first purifier 8-10% of Prussian blue may be obtained in the purifying materials.

(*To be continued.*)

WHITE WAX.

WE have previously referred in our columns to the report of Mr. Hosie on Chinese tallow, or white wax, further information upon which is given in the following article:—The customs returns of trade for the various Chinese ports give an interesting insight into the character of the articles which constitute the commerce of this country. Leaving aside tea, opium, cotton goods, etc., familiar articles in trade reports abroad—which form the vast bulk of imports and exports, many of the minor items strike the attention of a foreign reader as being curious objects of commercial enterprise.

In the report of exports of native goods from Ichang for 1889 occur such items as 13,000 pounds of tigers' bones, valued at about £610, a price that precludes the idea that they are to be used as a fertilizer—the only use to which anyone but a Chinese would think of putting them. As a matter of fact they are to be used as medicine, a sort of a tonic, which imparts to the invalid some of the tiger's strength. Another item is 9,000 pounds of "old deers' horns," worth £350. This is another medicinal article with whose peculiar properties the pharmacopœia of the West remains as yet unacquainted.

Perhaps the most interesting article of all, however, is "insect wax," of which 1,539,287 pounds were shipped from Ichang in 1889 in foreign ships. This immense quantity cost over 400,000 taels, or about £100,000. in gold. This "insect wax," or "white wax," is a product of the western part of the province of Se-Chuen and of parts of the adjoining province of Koei-Choo. It is, however, in the Chion-chang, valley, on the An-ning River, in Western Se-Cheun, that the wax insect most flourishes and finds its food most abundant. The whole subject of white wax was, by the direction of the English foreign office thoroughly investigated by Mr. Hosie, Her Majesty's consular agent at Shun-King, in Se-Chuen, and from his report thereon the following account is taken:—

It seems that in Western China, not far from the Thibetan frontier, flourishes a tree called by the Chinese "evergreen tree." It is, in fact, an evergreen with "leaves springing in pairs from the branches; they are thick, dark green, glossy, ovate, and pointed. In the end of May and beginning of June the tree bears clusters of small, white flowers, which are succeeded by fruit of a dark purple colour." It has been classified by the authorities of the Kew Gardens as *Ligustrum lucidum*. Early in the spring there appear on the bark of the boughs and twigs of this tree numerous brown, pea shaped scales. Upon opening these they are found to contain a mass of small animals, like flour, whose movements are almost imperceptible. These are the larvæ deposited by the white-wax insect, whose scientific name is *coccus pe-la*. These shells or scales are gathered by the Chinese about the end of April, and carried to the prefecture of Chia-ting, the centre of this industry, about 200 miles from the Chien-ch'ang valley. For this journey they are wrapped in packages, each containing about 16 ounces. The utmost care is taken to protect them from the heat, as the time of the development of the larvæ into insects is near at hand, and when this occurs they make their escape.

In the vicinity of the city of Chiating is a plain, described by Mr. Hosie as an immense rice field.

Almost every plat of ground on this plain, as well as the bases of the mountains, are thickly edged with stumps, varying from three or four to twelve feet in height, with numerous sprouts rising from their gnarled heads. These stumps resemble, at a distance, our own pollard willows. The leaves spring in pairs from the branches; they are light green, ovate, pointed, serrated, and deciduous. The identity of this tree is uncertain, but it is supposed to be a species of ash, the *Fraxinus chinnsis*. It is called by the Chinese "pai-la shu," or white wax tree.

The white wax scales, upon arrival, are made up into small packages wrapped in leaves, about twenty or thirty scales in each package, and suspended under the branches of the tree. Holes are punched in the leaves which constitute their covering, and the insects, on emerging from the scales, creep up the branches to the leaves of the tree, among which they remain thirteen days. They then descend to the branches and twigs, "on which they take up their positions, the females, doubtless, to provide for a continuation of the race by developing scales in which to deposit their eggs, and the males to excrete the substance known as white wax." It is supposed that the wax is intended by nature to protect the scales.

The first appearance of the wax on the undersides of boughs and twigs resembles snow, but it gradually spreads over the whole branch to the depth of one-quarter of an inch. At the expiration of 100 days from the placing of the insects on the wax tree the deposit is complete. The branches are then cut off. As much wax as possible is removed by hand, but, to secure what remains, the branches are afterwards boiled. This boiling of the branches destroys the scales and their larvæ, thus necessitating the bringing of fresh scales the following year from another locality, as above described. A pound of scales, it is said, will produce 4 or 5 pounds of wax.

The wax scraped off is put into boiling water, where it melts, and, rising to the surface, is skimmed off and put into moulds. Here it solidifies, and the work of manufacture is complete. The insects, which have sunk to the bottom of the pot, are pressed out, and, when the wax has all been extracted from them, are fed to the pigs. A ton of this wax is worth at Shanghai about £200.

A tree from which the branches have been removed is not available again for three years. If the wax is left on the tree, the male insects buried under it undergo a metamorphosis, emerging with wings in the autumn and flying away.

This article, in contrast with the deers' horns and tigers' bones, above referred to, has an intrinsic value and not a fictitious one, derived from fantastic ideas as to its medicinal qualities. It is, in fact, a substance of great utility in common use in China. It is a clear, white wax which melts only at a high temperature (160° F.), and is chiefly used to cover candles made of animal and vegetable tallow, to prevent too rapid combustion. It is used in some localities as a sizing for paper and cotton goods, a glaze for silk, and polish for furniture. It is also said to be used in southern China as a polish for stone ornaments. The above figures of its export give only a partial idea of the proportions of the industry. Immense quantities are shipped from the ports of the Upper Yang-tse in Chinese junks, and some is sent across the mountains and viâ the West River to Canton. It is much used there, where thousands of pounds of it, in large round cakes, are stored away in a single room.

The introduction of foreign kerosene, now so universally used in China, has had a discouraging influence on the production of white wax. Kerosene lamps afford a cheaper light than tallow candles, and the constantly increasing use of oil diminishes the demand for wax. This affords but another example of the silent but ceaseless revolution which the entrance of foreigners into China has inaugurated in every branch of native trade. It is possible, however, that a use for this wax may be found abroad to re-establish the interesting and once flourishing industry.

THE SALT TRADE.—A number of new concerns are being started near Northwich, in which use is to be made of brine pumped outside the area of the Salt Union property. Three chemical works are being erected at Lostock Gralam, and three new salt works have been started at Winsford. In fact new works are springing up all over the district.

THE PREPARATION OF QUININE.

THE finely-powdered cinchona bark is ground to a thin paste with lime, caustic soda, or sodium carbonate, and extracted with warm paraffin oil. On standing the oil separates, when it is run off and shaken with sulphuric acid. This solution is boiled, and whilst boiling is neutralised with sodium carbonate and allowed to cool. Quinine sulphate crystallises out on cooling, whilst cinchonine, and quinidine remain in solution as sulphates. The quinine sulphate is purified by re-crystallisation after treatment with animal charcoal. The mother liquor containing the other alkaloids is treated with caustic soda, and extracted with weak alcohol, when of the three bases precipitated by the alkali, quinidine and cinchonidine are dissolved whilst cinchonine is left behind. The two former can then be separated by means of their neutral tartrates, that of quinidine being considerably the more soluble.

Chemically pure quinine is manufactured by preparing the acid sulphate, which, after undergoing sufficient purification, is reconverted into the neutral salt. The consumption of quinine amounts to 200,000 kilos. annually. The Ceylon bark contains about 2·4% of quinine sulphate; Java bark 4·9%, and even up to 13%. The more recent cultivations of cinchona bark in Peru and Bolivia are of special importance, such bark yielding about 4·5% of sulphate of quinine.

THE APPLICATION OF BASIC SLAGS.

THE inconvenience, and often danger, attending the spreading of phosphatic slags, owing to the dissemination of the fine dust, is well known. In order to avoid this drawback the Agricultural Society of Brabant advocate the use of a mixture of slag and kainit, the latter not only obviating the difficulty, but also being beneficial, owing to the application of the potash.

Whether ground slags are applied either by hand or machine the operation is nevertheless equally disagreeable for the workmen employed, the fine dust carried by the wind covering them and their clothes. It is advisable, therefore, to spread kainit along with Thomas' slags. For this purpose the following mixture will be found most convenient, its advantages having been established by practical experiment. The two substances to be spread are mixed in convenient proportion, according to the extent of surface to be covered, for instance, say 200 kilos. of kainit to 100 kilos. of basic slag. The kainit is first crushed to an even size and then spread in a layer and sprinkled with water from a small watering pot On this the 100 kilos. of slag are spread as evenly as possible, and the whole is then carefully mixed. An evenly-mixed granular mass is thus obtained, which can easily be spread by hand and in a condition conducive to assimilation. In this way basic slags can be spread, in a high wind even, without giving rise to any inconvenience. If this method is adopted the mixture should be spread on the same day, or at any rate the day after, in which case there is no need to fear the likelihood of the mixture becoming hard.—*L'Engrais.*

GUM ARABIC AND GUM SENEGAL.

THE employment of gum senegal as an adulterant of, or even as a substitute for, gum arabic led the author to investigate the properties of these two gums.

Gum arabic forms rounded or angular, colourless, yellowish, or brownish, and strongly refractive little lumps; whilst gum senegal is usually in long, straight, or curled cylindrical pieces, but occasionally in mulberry-shaped nodules, and is either colourless or faintly yellow or white, like etched glass, superficially, and lustrous and transparent internally. The two gums are therefore readily detected in the uncrushed condition, but under other circumstances they require further investigation for their identification.

Water dissolves both gums, leaving a residue of wood fibres, these being usually red if from gum arabic, and black from gum senegal. Potassium hydroxide and copper sulphate produce a blue precipitate in both solutions; the gum arabic precipitate is more considerable than the senegal precipitate. Moreover, the former is coherent and rises to the surface, whereas the latter is more flocculent and remains disseminated in the liquid. The precipitates are only very slightly soluble on warming, and are not reduced even on boiling. Under similar treatment, dextrin also gives a bluish precipitate insoluble in the cold, but soluble to a clear, dark-blue solution on warming, which solution is completely reduced by prolonged boiling. By heating with dilute potassium hydroxide for some time, solutions of gum arabic or dextrin become amber-yellow; solutions of gum senegal, on the other hand, scarcely alter, or are but very faintly yellow.

Mixtures of the gums arabic and senegal behave, with potassium hydroxide alone, like gum arabic; with potassium hydroxide and copper sulphate, like gum senegal. The blue precipitates from mixtures of dextrin with gum arabic or gum senegal are reduced on boiling, provided the quantity of dextrin is not too small; but when the latter is the case, after thoroughly warming, the precipitate must first be filtered off, then, on boiling the filtrate, reduction takes place if dextrin is present. When both gums as well as dextrin are present, the precipitate is washed, dissolved in dilute hydrochloric acid, and the gums precipitated by means of a large excess of alcohol; when settled, they are washed and examined by the above methods.

The examination of a sample of gum arabic may be conducted in the following manner:—Dissolve the powdered substance in lukewarm water, examine residue—any gelantinous matter indicating foreign gums; treat the solution with excess of potassium hydroxide and copper sulphate, warm, filter, and examine for dextrin and senegal as described above.

Gum senegal has been stated to be more hygroscopic than gum arabic; but on drying at 105° the former lost 13·39 per cent, the latter 14·56 per cent., and, on exposure to the moist atmosphere, the former reabsorbed 6·15, the latter 6 34 per cent. of water.—*Chem. Zeit.*

CEMENT TRADE OF STETTIN.

THE export of cement from Germany amounted in 1890 to 341,834 barrels, against 274,300 barrels in 1889. The home consumption has decreased, because of the large and continued strikes in the building trades and an early winter.

The Stettiner Portland Cement Fabrik employed in its works and chalk mines about 550 hands, with an average pay of 2·70 marks per day, and declared a dividend of 27 per cent.

The Portland Cement Fabrik Stern produced 193,400 barrels, containing 171 kilos. per barrel, against 203,000 barrels in 1889. This company paid in 1890 434,176 marks, or 2·71 marks each per day, for wages, against 432,346 marks, or 2·58 marks each per day, in 1889.

The Stettin Bredower Portland Cement Fabrik, damaged by fire in 1889, began work towards the second half of the year 1890. This company produced 89,995 barrels of cement and 2,794,000 bricks, employing about 280 hands, and paying 208,341 marks for wages.

The Stettiner Chamotte Fabrik Actien Gesellschaft increased its capital in 1890 from 2,000,000 to 4,000,000 marks, realizing a gross profit of 886,127 marks, and declaring a dividend of 30 per cent. The company owns, besides its former establishment, chamotte works in Bodenbach and Niederlahnstein; gas works in Lobositz, Delitzch, Nieder-Ingelhein, and Lichtenburg; and a kaolin wash at Bornholm. Its reserve funds amounted to 1,375,000 marks.

EXTRACTING ALUMINA FROM KAOLIN.

A NEW process for separating alumina from kaolin or clay beds is intended to provide an economical process for separating the alumina from the other ingredients and also of preserving the by-products, whereby the waste may be made small and the production of alumina cheap.

The process is in two steps. The first consists in beating or churning the kaolin immersed in water until the mixture has about the consistency of cream, and then treating the thick liquid mass with slight excess of strong sulphuric acid. The mixture is then heated until the clay is decomposed, the alumina going into solution as sulphate of aluminium, while most of the silica is deposited as a precipitate The mass is then evaporated to the proper concentration, in order to precipitate any silica that may have gone into solution. The solution of aluminium sulphate may then be readily separated from the insoluble silica by any of the ordinary means of filtration. The iron (nearly invariably contained in kaolin as an impurity), which has also been dissolved by the treatment with sulphuric acid, may be removed by treatment with binoxide of lead or manganese, or in any other way known to chemists, leaving a solution of sulphate of aluminium practically pure. This solution is then evaporated to recover the salt. This ends the first step of the process.

The second step of the process starts with sulphate of aluminium. It is immaterial whence the supply of the sulphate is obtained, whether in accordance with the first step of the process or whether from extraneous channels. In this step the aluminium sulphate is mixed in a suitable retort with a suitable proportion of sulphur, and the mixture is heated. The amount of sulphur used is, within reasonable limits, unimportant, as the sulphur is regained in the form of H_2SO_4 as a by-product. The sulphur, having a high affinity for oxygen, aids in breaking up the $Al_2(SO_4)_3$ into Al_2O_3 and SO_2, the reaction being, probably, $2Al_2(SO_4)_3 + 3S = 2Al_2O_3 + 9SO_2$. The SO_2 developed by this treatment is carried away and converted into H_2SO_4 in the usual way. Any excess of sulphur goes off as sulphur fumes, which, by the aid of any suitable oxidising agent, are oxidised and converted into SO_2 on their way to the sulphuric acid chambers. The alumina remaining in the

retort, while generally containing a trace of sulphuric acid, is almost pure, and is well suited for use in the manufacture of the metal aluminium.

Some of the advantages of the process or processes are that in the first step by converting the kaolin and water into a creamy mass the particles are separated and the kaolin is reduced to a very finely divided state, and by using water, which rapidly absorbs H_2SO_4, as the suspensory medium, the solid particles are laid open on every side to the attacks of the acid. In the heating which follows the acid is gradually concentrated, a part of the water being driven off and the acid entering into combination with the alumina of the kaolin. By this means the maximum effect of the sulphuric acid in dissolving the alumina out of the kaolin is obtained. Moreover, the silica separated from the clay by this treatment when washed is almost absolutely pure, and has a market value sufficient to make it an important by-product.

It will be noted that the sulphuric acid created in the last step may be used for treating fresh kaolin, and that the only other by-product, silica, is also preserved for use in the arts. Any excess of sulphuric acid from the process would find ready sale as a manufactured product. It will thus be seen that from crude kaolin and sulphuric acid, aluminium sulphate and silica are manufactured, and that from the aluminium sulphate thus formed and sulphur, alumina and (with the aid of a proper oxidising agent) sulphuric acid are obtained. By thus economically producing as valuable by-products both sulphuric acid and silica, as well as the main product, alumina, the cost of obtaining the alumina alone is greatly reduced, and, moreover, the sulphur combines with the sulphate of alumina at a comparatively low temperature, thus diminishing the amount of fuel required and still further increasing the economy of the process.

ARTIFICIAL IVORY FROM MILK.

ARTIFICIAL IVORY is, according to an American paper, to be made in future out of milk. The milk is first coagulated as in the process of making cheese. This is then strained and the whey rejected. Ten pounds of the curd is taken and mixed with a solution of three pounds of borax in three quarts of water. This mixture is now placed in a suitable vessel over a slow fire, and left there till it separates into two parts, the one as thin as water, the other rather thicker, somewhat resembling melted gelatine. The watery part is next drawn off, and to the residue is added a solution of one pound of a mineral salt in three pints of water. Almost any mineral salt will answer: for example, sugar of lead, copperas, blue or white vitriol This brings about another separation of the mass into a liquid and a mushy solid. The liquid is again got rid of by straining, or better, by filtering. At this point, if desired, colouring matter may be added; if not, the final product will be white. The solid is now subjected to heavy pressure in moulds of any desired shape, and afterwards dried under very great heat. The resulting product, which has been named "lactitis," is very hard and strong. It may be used in the manufacture of a great variety of articles, such as combs, billiard balls, knife handles, penholders—in fine, for almost anything for which bone, ivory, ebonite, or celluloid have heretofore been employed.

ANALYSIS OF A PEKOE CEYLON TEA.

By JOSEPH F. GEISLER.

THIS sample of tea would be considered a curiosity by most people, inasmuch as its appearance is so different from that of the usual varieties of teas met with in commerce. It is a fine Pekoe Ceylon tea, and its appearance shows it to consist of a mixture of small dark and yellow leaves, the latter predominating. These small leaves are tightly rolled into coils varying from ¼ to ½ inch in length, the greater portion being about $\frac{5}{16}$ inch long, with an average diameter of about $\frac{1}{32}$ inch. The small, light, yellowish-coloured coils are completely covered with hair, giving some a silvery appearance.

When treated with boiling water, the stemlike cylinders are shown to be thick leaves about ¼ inch wide, of a leathery texture, very glossy on the inner surface, with prominent midrib, the edges and midrib along the back of the leaf being covered with hair. The small cylinders reveal themselves as leaves $\frac{5}{16}$ in length and about $\frac{1}{16}$ inch wide, while the very small ones are principally a mass of hairs.

The analysis of the tea gave the following data:—

Moisture (loss by drying at 100° C.)	6·20%
Soluble ash	3·77%
Insoluble ash	1·53%
Total ash	5·30%
Theine	2·54%
Total tannin	22·79%
Total extractive matter	43·40%
Insoluble leaf	50·40%

In the above data there is nothing particularly noteworthy excepting that the per cent. of tannin is very high.

An infusion of the tea was made by treating one part of tea with 100 parts of boiling distilled water and allowing ten minutes for the maceration. Under these conditions the tea yielded to water the following percentages:—

Theine	2·44%
Tannin	17·19%
Total extractive matter	33·25%
Ash (total)	3·44%
Phosphoric acid (P_2O_5) in ash	6·18%

The alkalinity of the ash was equivalent to 1·798% of K_2O.

The infusion obtained was of a dark golden yellow colour, and had a very agreeable aroma and pleasant taste. From the above it will be seen that the infusion took up 96·6% of the total theine, 75·3% of the total tannin, and 91% of the soluble ash, data, which, on comparison with the analysis of standard teas indicates that the sample in question was a good one.—*Jour. Am. Chem. Soc.*

THE BRIN OXYGEN PROCESS FOR PURIFYING GAS.

THE Brin oxygen process, as applied to purification of gas with lime, has been in use for some time at the works of the Shrewsbury Gas Company, under the supervision of Mr. W. Belton, Assoc. M. Inst. C.E., the Engineer and Secretary. Shortly after it was adopted it was found that the plant was not large enough for the requirements of the works, and therefore it had to be stopped to allow of its extension. As this occupied about two months, it seems to have given rise to an impression that the process had been abandoned. This is not the case; and the alterations having been completed, it has been in operation again for a long time now. So far from there being any intention of abandoning the system, the results obtained with it are highly encouraging, as will be seen from the following statement:—

RESULTS OF PURIFICATION OPERATIONS AT THE SHREWSBURY GAS WORKS.

	Without Oxygen. Year ending June 30, 1890.		With Oxygen. Year ending June 30, 1891.
Gas made	125,777,000 cub. ft.	..	133,468,100 cub. ft.
Purifiers in use	One set, 24 ft. by 20 ft.; five tiers = 2 ft. 4 in. depth of lime, One set, 12 ft. by 20 ft.; four tiers = 1 ft. 2 in. depth of lime.	..	One set 24 ft. by 20 ft; five tiers = 2 ft. 4 in. depth of lime. —
Lime used	337 tons 19 cwt. = 60¼ lb. per ton of coal.	..	288 tons = 46½ lb. per ton of coal.
Oxide used	None.		None.
Coal used	11,406 tons 14 cwt. 3 qrs. Ruabon W. and B. and Wynnstay.	..	13,034 tons 2 cwt. 2 qrs. Wynnstay only.*
Cannel used	1,163 tons 12 cwt. Nottingham 22-candle.	..	832 tons 16 cwt. 3 qrs † Nottingham 22-candle.
Illuminating power of gas	16·64 candles.	..	16 84 candles.
Total sulphur, avge.	10 61 grains.	..	11·50 grains.
Wages for purifying	£94. 10s. 11d.	..	£79 3s. 1d.
Cost of extra labour	—		3s. per week for attending producer.
Fuel to producer	—	..	9 cwt. of coke per 24 hours.
Nuisance	Awful smell from sulphur boxes and threatened with action.	..	Scarcely any smell; very little nuisance.

Jour. of Gas Lighting.

* The coal used in 1891 is very inferior to that previously employed.

† The winter of 1889-90 was mild; whereas that of 1890-91 was exceptionally severe.

SOCIETY OF CHEMICAL INDUSTRY (LONDON SECTION).—On Monday, January 4th, a meeting of this section will be held at the society's rooms, Burlington House, at 8 p.m., when Mr. Boverton Redwood, F.I.C., F.C.S., will read a paper on "The Galician Petroleum Industry."

Reports of Companies.

THE WHITE LEAD CO., LTD.

The ordinary general meeting of the White Lead Co., Ltd., was held last week at the City Terminus Hotel, under the presidency of Sir Henry Tyler, M.P. The Chairman, in moving the adoption of the report, stated that since their last meeting he had become very much more encouraged in regard to the prospects of the company, and he thought he was justified now in telling them that he thought they would make an ultimate success of the business. Naturally, at first, they had been obliged to depend upon the people who brought the concern to them, but changes had become necessary. They had induced Lieut.-Col. F. S. Terry to become the resident director; that gentleman was daily at the works, and he also communicated with them daily, and they knew that they had got the management into honest hands. They had heard that morning that they had the contract for the Dublin Port and Dock Company, and they were taking other business. They were not yet able to turn out the quantity of stuff they desired to do, but they must go on by degrees, and ultimately, he hoped, they would turn out a quantity that would give them a very satisfactory profit. They had had a great deal of trouble with their condensors; they were built of wood, and were apt to catch fire, but they were now getting over this difficulty. Lieut.-General Sir Gerald Graham, V.C, seconded the motion. Mr. Sampson stated that since their last meeting he had been investigating the history and the position of the company. He moved an amendment deferring the adoption of the report and adjourning the meeting in order to afford an opportunity of terminating the litigation now pending. The chairman stated that Mr. Sampson was quite right in saying that if the litigation, which was against the company and the directors, were to go on, it would be the ruin of the company; but the litigation had, he said, been the work of Mr. Sampson. He (the chairman) had undertaken with his own money to carry their business through, and he wanted all the shareholders' support in doing it, but he did not think that on that occasion they ought to hear Mr. Sampson. He put the question to the meeting whether that gentleman should be heard, and announced that the show of hands was against Mr. Sampson. Mr. Sampson said he was endeavouring to put an end to the litigation. The Chairman, in answer to a shareholder, stated that the accounts were audited up to June 30, but they had purposely delayed holding the meeting because he had wanted to give them the latest information. The solicitor stated that by the articles of association the accounts were to be made up to a date which was to be as near the date of the meeting as could be conveniently fixed. After a few remarks from Mr. Parker-Rhodes, who expressed satisfaction at the improved position of the company, the chairman put the resolution, and declared it carried with two dissentients. The chairman then proposed, and Sir John Stokes seconded, a resolution re-electing Lieutenant-General Sir G. Graham to his seat at the board. Mr. Sampson asked Sir Gerald Graham what steps he took to verify the vendors' statements before endorsing the prospectus; whether he received an allotment of shares from the vendors, and, if so, whether he was aware of the fact when he signed the vendors' prospectus; and whether he did not write to him (the speaker) in October, 1889, assuring him that everything in the prospectus was correct. Mr. Parker-Rhodes inquired if Mr. Sampson's questions formed part of the business before the meeting. The chairman replied that it was all part of the litigation against the company, and he would not allow the questions to be put. He then submitted the resolution and declared it carried with two dissentients. A resolution was afterwards passed electing Messrs. Moores, Carson, and Watson, of Glasgow, auditors to the company,

THE CAPE COPPER COMPANY, LIMITED.

The fourth ordinary general meeting of the Cape Copper Company, Limited, was held last week in London, Mr. E. A. Pontifex presiding. The Chairman, in moving the adoption of the report, said three or four circumstances had combined to somewhat retard the current of the company's prosperity. Still a profit of some £70,000 in a year, which he had heard described by a city magnate as the very worst he had known in his long experience, was not to be altogether despised. In the previous year they had made a profit of £106,410. The decrease in the present campaign had been caused by an increase in the costs and a diminution in the returns, together with the lower price of copper. Besides this there was an accidental circumstance, namely, that the richness of the stock of ore had been over estimated in the previous year. This apparent loss had been liquidated in the present year by carrying the deficiency to the suspense account, which would otherwise have been largely available for the general purposes of the company. The reserves of ore were only between 3 and 4 per cent. less than that reported in the previous year. The manager in his report expressed the opinion that taking the position of the mines as a whole the company was now in a better position than at the corresponding period of last year. The directors proposed to lay before the shareholders some resolutions for an increase of capital by the issue of 75,000 preference shares of £2. each, carrying certain rights and privileges. The liabilities of the company, which amounted at the date of the closing of the accounts to £294,233, were too large in proportion to the amount of the capital, and the directors considered it advisable to make the proposed issue in order to have a larger reserve for working capital. The special resolution to increase the capital of the company was passed.

SALFORD GAS.

The illuminating power is expressed in standard candles; the ammonia and total sulphur in grains per 100 cubic feet. The carbonic acid is calculated to volumes per cent. The determinations have all been made on the gas supply to the Manchester Technical Laboratory, 32, Blackfriars-street.

Date. 1891.	Illuminating power.	Ammonia.	Total sulphur.	Carbonic acid.
Dec. 24	.... 12·5	.. 0·08	.. 28·0	.. 0·91
,, 28	.... 15·7	.. 0·05	.. 21·8	.. 1·20
,, 29	.... 13·9	.. 0·05	.. 17·01	.. 1·34
,, 30	.... 15·4	.. 0·03	.. 27·84	.. 1·18

THE USE OF AMMONIA IN ALIZARINE DYEING.

IT is indispensable in the case of piece-dyed goods that they be well dyed through, in order to render them fast against wear. The interior of the cloth when cut must be almost as deeply coloured as the face. The penetrating quality is not the same with all dyestuffs, and success, therefore, must depend upon the employment of a proper dyeing process, and also upon the character and cleanliness of the fabric to be dyed. The alizarine colours, which are otherwise remarkably fast, lack much in their penetrating qualities. In spite of entering cold into the bath, and gradually raising the temperature, which all dyers know prevents a too rapid and uneven absorption of the dyestuffs, and assists their penetration into the fabrics, alizarines never dye through as well as other kettle colours. It is true that alizarines are principally used for finer piece-dyed goods, the texture of which is generally very compact, in consequence of which they offer greater obstacles to the penetration of the dye. Still, it is true that alizarine will not dye as well as other kettle colours. The "Badische Anilin and Sodafabrik" recently recommended the use of acetate of ammonia for promoting the penetration of alizarine colours. This is sold in a fluid state. It is added to the cold or lukewarm bath at the same time as the solution of the dyestuffs, and in a quantity of about 3 or 4 per cent. of the weight of the fabric. This acetate of ammonia is not added for the purpose of neutralising hard water, which must be done in the usual manner during the dyeing process. If required, acetate of ammonia may be added in small portions, alternately with the acetic acid. The results obtained by this addition of acetate of ammonia are, as has been determined by practical tests, highly favourable. Experiments have been made with thoroughly clean worsted of a very high count of warp, which, before mordanting, had been scoured with a concentrated solution of urine and fuller's earth. A remarkable improvement was gained in the penetrative quality of the dyeing, as compared with pieces dyed in the ordinary way, without any addition of acetate of ammonia, but when experiments were made with goods not entirely clean, especially those from wool which had been difficult to wash, an improvement was barely noticeable. Cloth, treated with an addition of ammonia, was hardly better dyed through than that dyed without, which is another proof that oily or fatty impurities hinder the penetration of the alizarine. The acetate of ammonia has also another influence. When dyeing blue with alizarine, it takes away a little of the reddish hue, and, when dyeing black, it gives the colour a bluish tinge. The writer also states that the wool fibre takes a slightly rough feel when treated with this acetate, and that the fabric becomes correspondingly hard. The soft condition, however, can be partially restored in washing by using a thin fuller's earth solution. It also recommended that pure ammonia be employed for producing a blue-tinged black on wool or yarn, in a bath with alizarine black W R. According to Dr. Lehne, the material to be dyed is to be boiled for one hour with 35 per cent. of the dyestuff. Next are added 10 per cent. alum, 1 per cent. sulphate of copper, and ½ per cent. oxalic acid, and boiling is continued for 1½ hour longer. Then one quart of 20 per cent. ammonia, diluted with ten times its weight of water, is added for 1,000 quarts of the bath, and boiling is prolonged for thirty minutes. The material is to be withdrawn before adding the ammonia. Experiments, on a small scale, showed that the black received a fine blue tinge.

Trade Notes.

THE IMPORTS OF DUTCH PAPER.—Dutch paper is exported very largely to Great Britain. The value each year amounts to nearly half-a-million sterling.

FIRE AT AN ALUM WORKS.—Damage to the extent of £2,500. was done recently by fire at the Alum and Ammonia Railway Works, at Nitshell, near Glasgow.

PHOSPHORUS IN SPAIN.—The amount and value of the imports of phosphorus into Spain, the greater part of which comes from France, for the past two years were as follow:—1889, 48,176 kilogrammes, valued at 289,056 pesetas; 1890, 58,776 kilogrammes, valued at 352,656 pesetas.

TO CLEAN GOLD —To remove quicksilver from gold, hold the articles over the flame of a candle until they are covered with smoke, then take half a teaspoonful of boiling water, pour in two teaspoonfuls of vinegar, half a teaspoonful of salt, and three grains of zinc. Stir them together, and put in the articles; let them stay in the liquid for three days. Then take out and rub off with a piece of chamois skin when cleaned.

SALIPYRINE.—Salipyrine, a salicylate of a antipyrine, manufactured by Riedel, of Berlin, has been used with excellent results in Europe for influenza, etc., but has heretofore not appeared on the American market on account of a conflict in the patent rights covering antipyrine. This obstacle has now been removed, and salipyrine is being imported for sale in the United States.

SALE OF A QUICKSILVER MINE.—The Bradford quicksilver mine, together with the land surrounding, near Calistoga, Cal., has been sold by the Bradford family to D O Mills, of New York, J. B. Randol, superintendent of the New Malenda quicksilver mine in Santa Clara county, and Thomas Bell, formerly interested in the Idra quicksilver mine.

THE PRICE OF ALUMINIUM.—Aluminium is now selling in America by the Pittsburg Reduction Company in small lots at 90 cents per pound for the No. 1 grade metal; 75 cents per pound in ton lots. The No. 2 grade metal between 94% and 97% pure is selling at 65 cents. per pound in ton lots. This is the grade of metal sold to iron and steel makers.

A SPEAKING WATCH.—One of Edison's latest inventions will be exhibited at the next electric exhibition at St. Petersburg, and will consist of a speaking watch. The dial is made to represent a human face, and the interior contains a phonograph. The mouth opens and tells the hour, the half-hours, and the quarters in a strikingly human voice. It can also be set at a particular hour in the morning to remark several times running, "It is time to get up!" "It is time to get up!"

DYNAMITE EXPLOSION.—A severe explosion occurred recently at the dynamite factory at Hurrstraw, N. Y., the building being completely destroyed, partly by the explosion, and partly by a fire which followed Seven men were killed. The shock was severe, and was felt twenty miles away. Half a minute after the explosion the storehouse, 100ft. distant, also blew up, although the other buildings of the works, which also contained dynamite, escaped destruction. The cause of the explosion is unknown.

NEW COAL DISCOVERY IN STAFFORDSHIRE.—The Darlaston Coal and Iron Company, South Staffordshire, has just come upon a large new area of thick coal upon its Essington estate. The quality is pronounced to be similar to the well-known Cannock Chase coal, which adjoins, and a new company, termed the Holly Bank Company, with a capital of £50,000. is now in course of formation to delevop the new discovery, under arrangement with the present owners. It is proposed that the two companies shall share equally in the profits.

A SERIOUS FIRE.—A fire occurred recently at 106, Seymour-place, Bryanston-square. The occupant, Mr. M. Gilbert, an oil and colourman, stored paraffin in a vault under the pavement, and, through a mishap with a candle, 100 gallons of the inflammable liquid became ignited. The oil blazed up in the most startling manner, and those near had to run for their lives. The shop and other parts of the premises took fire, and it was a long time before the flames were subdued, and then not until the whole of the oil had been destroyed and the building much damaged.

TREATMENT OF WASTE ACIDS.—The Wolverhampton Corporation have been involved for some years in costly litigation with neighbouring land-owners owing to the pollution of various streams by the presence of galvanisers' waste pickle in the sewers. The Corporation have therefore been pressing the galvanising firms to find other means of disposal for their waste pickle than down the sewers. With this object Mr. Adolphe Crosbie, of Walsall Street Chemical Works, Wolverhampton, has recently introduced a process by which the waste pickle can be so purified that the remaining liquid, when tested, shows itself free from acid or iron, and is practically a clear inert liquid. At the present time Mr. Crosbie has a number of tank carts going round collecting the waste pickle to be precipiated at his own works, where about 2,000 gallons are being dealt with daily.

USES OF PEAT.—The Germans and Swedes are utilising their peat bogs in the manufacture of naphtha, tar, solar oil, paraffin, acetic acid and gas. Moreover, the peat yields an elastic fibre which, freed from dust, is employed for weaving into carpets. Good peat also furnishes a cellulose which is valuable to paper makers. Besides serving as a wholesome litter for live stock, it is also used to preserve perishable goods. Meat and fish are now packed in peat litter for transport between Trieste and Copenhagen. Here is a matter for the consideration of Irish landowners, and peasant proprietors as well.

THE PRODUCTION OF OILCAKE —The *Volkswirtschaftliche Wochenschrift* communicates the following extract from a Marseilles report: The oil factories of Southern France produced in 1890 2,006,750 mztr. of oilcake, 784,000 mztr. of which having been obtained from ground nut kernels, and 425,700 mztr. from Levantine and Indian Gingellyseed. 711,784 mztr. of oilcake were exported, of which 557,900 went to Germany, 97,390 to England, 7,650 to Sweden and Norway, 7,463 to Spain and Portugal, and the remainder to divers countries. The consumption of Southern and Central France reached 1,294,918 mztr.

MACHINE OIL IN EGYPT.—Machine oil is imported from England and America, chiefly from the latter country, says the British Consul. American oil is preferred for cylinders on account of its density, which is greater than that of English cylinder oil. There was an increase of more than £30,000 in cotton-seed oil, which is almost entirely English. This oil, besides being used for lighting purposes, is also now largely employed as cooking and salad oil, not only by natives, but even by Europeans. Frequently, too, it is passed off as olive oil. There was a falling-off of more than £30,000 in olive oil, which may be due to the increasing use of cotton-seed oil as a cheap substitute for it.

FRUIT FROM AUSTRALIA.—An initial consignment of raisins has been received from the Australian irrigation colonies on the river Murray, the establishment of which some three or four years ago, has been attended with remarkable success. The raisins are entirely sun-dried, the clear, dry atmosphere of that part of Australia where the settlements are situated enabling the drying of all descriptions of fruit to be carried out in the most perfect manner and without risk of injury. They have been pronounced of excellent quality both in flavour and appearance. Oranges, lemons, raisins, currants, apricots, peaches, figs, &c, together with wine, olive oil, and many other products, for which a large demand is anticipated, will be sent to this country in future years.

ANTI-SULPHURIC ENAMEL —Acid spray from a battery of accumulators is a great deteriorating agent where metal fittings and brass or copper conductors are about. A London firm set to work and invented an anti-sulphuric acid enamel, which is now largely used in many electrical works. For coating woodwork, iron, and copper in the neighbourhood of batteries, it seems to have proved itself thoroughly successful, and the long list of names of electrical firms using this enamel shows its popularity and usefulness. Even with strong sulphuric acid it will resist for weeks. At Kensington Court they seem to find it a perfect protection against acid spray. It is applied exactly like varnish, in black or other colours.

TECHNICAL INSTRUCTION IN CHESHIRE.—The Technical Instruction Committee of the Cheshire County Council have had under consideration the difficulties experienced in giving advanced education in rural districts through being unable to obtain qualified teachers. They have approved a plan which involves the outlay of a vast sum of money during the coming spring for the purpose of opening classes on Saturdays, to be available for teachers in elementary schools, where they can get instruction in the principles of agriculture, drawing, and cookery, and qualify themselves for taking out the necessary certificates and diplomas, so that another winter they may become teachers, and earn grants from the Science and Art Department and the County Council. Certain centres will be established, and the County Council will pay the fees for the teachers, thus educating them free of cost.

A VALUABLE BEQUEST.—Prince Lucien Bonaparte has bequeathed to the English nation his well-known "Cabinet of Chemical Elements." In all there are 60 elementary substances in various quantities, some so rare as to be of especial value, and a few almost priceless. Among them is the finest and purest gold; platinum still more precious; a sample weighing 6¼ oz. troy of iridium (about the size of half a walnut), three times the value of platinum; germanium, still higher in money value, the market price being 60 times that of pure gold. Among the other samples of rare elements may be mentioned beryllium, cerium, didymium (though a German chemist has, it is said, resolved this into two constituents), erbium, gallium, indium, lanthanum, molybdenum, niobium, osmium, palladium, rhodium, rubidium, ruthenium, tantalum, tellurium, thorium, thallium, vanadium, vitrium, zirconium. The contents have been estimated by Mr. Pond, chemist, of Fleet-street, at between £250. and £300. The late Prince was greatly aided by the Princess in his laboratory work, for she, too, had a great love of chemistry. He spent much of his time in this research.

New Use for Grape Stones.—The oily matter present in grape stones has lately been made the subject of a chemical investigation with a view of ascertaining to what use it can be put. The result has been to show that the oil is by no means dissimilar to castor oil, resembling that substance in its high acetyl number and iodine number, a resemblance which extends to its property of yielding Turkey red oil on treatment with sulphuric acid. Direct dyeing tests showed the product to be excellent. Should this result be confirmed, a novel industry may be expected to arise.

Correspondence.

*** We do not hold ourselves responsible for the opinions expressed by our correspondents.*

ANSWERS TO CORRESPONDENTS.

T. T.—Thanks for your post card and information.

C J M.—It is hardly suitable to our columns now. We will see what we can do at a subsequent date.

J. P. R.—We are glad to hear you speak so well of the *Journal*, we shall have much pleasure in acceding to your request.

Nunquam.—It is closed for the Christmas Session, but will probably open about January 12th inst.

Inquirer—(1) Yes, on January 16th inst. (2) Write us again later.

J. H. G.—(1) Thanks for your letter. You will see the reports have started again and will now continue. (2) Till about February most probably.

Market Reports.

MISCELLANEOUS CHEMICAL MARKET.

There is a general firmness in the position of all products of the alkali trade. In bleaching powder an advance of price has been made to £7. 10s. per ton nett, f.o.r. at makers' works, and there is a strong demand for this article. Caustic soda still maintains a firm position at prices latterly ruling, both for prompt and forward deliveries, viz., for 10 ton lots, f.o.b. Tyne, 77 %, £11. 10s. per ton; and f.o.b. Liverpool, 74 %, £11 5s.; 70 %, £10. 5s; 60 %, £9. 2s. 6d.; and cream, 60 %, £8. 17s 6d. Soda ash in all qualities is very firm for near deliveries at 1⅜d. per degree f.o.b. Liverpool. "Ammonia" ash 58%, 1 5/16d. Soda crystals steady at £3. 5s. to £3 10s. per ton f.o.r., nett weight. Bicarbonate of soda, £6. 15s. per ton. Chlorate of potash and soda, 5⅜d. and 7d. per lb. respectively. Salt cake steady at 37s. 6d. to 42s 6d. per ton at makers' works, according to district of production. Recovered sulphur still a firm market, with short supply, spot price being, for lumps in bulk, £6 5s. to £6. 10s. f.o.r. Large sales have been concluded for 1892 delivery at the parity of £5. 15s. f.o.r. Vitriol and muriatic acids continue in good demand and prices are well maintained. Sulphate of copper without any special demand, remains somewhat irregular in price at £14 10s. to £15. per ton. White powdered arsenic moving more freely at £10 17s 6d. to £11. at usual points. Borax rather firmer at £28 10s to £29 nett per ton. Aniline oil and salt follow the lower tendency in price of benzol, and are nominally quoted on the spot, 8¾d. and 7½d. per lb. respectively. Carbolic acid crystals are still without any better outlook, and business continues to be done at 5 1/16d. to 5 1/4d. per lb. for 39/40°. Acetates of lime rather quieter, but quotations remain steady. Acetate of soda rather lower. Sugar of lead and nitrate of lead are less enquired for, and only little business passing at slightly easier rates. Potash, caustic, and carbonate continue to hold a fairly strong position, demand and supply being fairly balanced, and prices firm. Bichromates without change. Generally, in finer chemicals, trade is reported quiet.

REPORT ON MANURE MATERIAL.

Owing to the intervention of holidays the market has been very quiet, with but little business passing.

Quotations for mineral phosphates remain as last reported, and we do not hear of any important transactions.

The position of River Plate cargoes of bones remains unchanged, there being buyers in any position at £4. 5s., and sellers of cargoes afloat at £4. 7s. 6d. delivered good U.K. port. There have been further sales of crushed Kurrachee bones at £4. 11s. 3d. on spot and for shipment, and that is nearest closing value. East India bone meal for shipment is quoted £4. 16s. 3d., but probably a shade less than this price would do. On spot £4. 11s. 3d. is nearest value, and sales in quantity have been made at the price. £4. 12s. 6d. paid for a parcel of Rangoon meal, ex ship Liverpool. Good clean parcels of charring bones selling at £4. 10s. per ton.

The position of nitrate of soda is very firm, but prices are unchanged. On spot 9s 3d. per cwt. required for fine quality, and nothing under this would do for good test cargoes due at port of call. For October-November cargoes, 9s. 6d. to 9s. 7½d per cwt., according to size and test, required.

There is but little inquiry for other nitrogenous material, sulphate ammonia being so much cheaper. Kainit continues scarce at 42s. 6d. per ton, nett cash, delivered free to rails. Quotations for superphosphates are unchanged.

TAR AND AMMONIA PRODUCTS.

The benzol markets remain in a very unsatisfactory state. Business for early delivery next year is reported at 2s. 4d. for 90's, and 1s. 9d. for 50-90's. Though these prices appear to be low, it should not be forgotten that in the spring of 1886, when the carbonising works in Germany were not started, we had such prices as 1s. 6d. for 90's, and 1s. 4d. for 50-90's. Now that the German works are in full operation with every prospect of extensions, it is quite possible that we shall see these prices again. Solvent naphtha, creosote, and crude carbolic acid are very flat indeed; the only product for which there is a good demand being pitch. In anthracene there is no business, the nominal price being 1s. 1d. for 30% A, and 9d to 9½d. for 30% B.

The sulphate of ammonia market after the holidays seems assuming a steadier tone, and there are buyers to-day for January delivery at £10. 5s. f.o.b. Hull. This is a satisfactory sign, and perhaps the turning point has come. So far, however, the dealers are the principal buyers. The London and Leith markets may also be quoted as £10. 5s.

TYNE CHEMICAL REPORT.

In chemicals, business still continues dull, with the exception of bleaching powder. For the product there is a good demand, and considerable business has recently taken place at full prices The article has a hardening tendency. Caustic, 77%, £11. 10s. per ton; caustic, 77%, £10. 5s. per ton; soda crystals, £3. 3s. 6d. per ton; f.o.b. £3. 1s. 3d. rails, gross weights; recovered sulphur, £6. 10s, and very scarce. Sulphate of soda is quoted at 37s. to 40s. per ton, bulk. The machine made sulphate is of exceptionally good quality, and appears to growing in consumption, particularly is it being adopted by glass bottle makers Salt, 9s. to to 9s. 6d. per ton f.o.b. Tees, and dull. Prices for Barium products remain unaltered. Steady market for coals. Best Northumbrian steam is quoted at about 10s. 3d.; small steam quiet at 4s to 4s. 6d. Large demand for gas coal, price for prompt 9s. 6d. per ton. Manufacturing coal quiet, owing, probably, to many factories being closed.

WEST OF SCOTLAND CHEMICALS.

GLASGOW, Tuesday.

Alkalies for present dealing are all unchanged, but the local market has been informed that the United Alkali Company are prepared to engage themselves for 1892 supplies on easier terms, and, further, becoming bound, in the event of prices leaving reduced later on, to give these advance purchasers the benefit of the fall. Meanwhile, there is still very little doing, and no expectations till after the incoming of the New Year. The new chemical works at Irvine are approaching completion, and orders for forward supplies, it is said, have already been booked on terms competitive with present Union fixtures. Prices of general chemicals for prompt delivery are meanwhile quite unchanged.

The mineral oil companies are in full delivery at present with their burning products (oil, naphtha, and candles), and the solid paraffins continue in fair demand, particularly semi-refined wax, with values of these all maintained, but lubricating oils are inclined to droop, prices gradually receding.

Last week's shipments of sulphate of ammonia at Leith were over the average (664 tons) towards the completion of past made contracts to the end of the year. New transactions are few, and buyers still supply themselves at the figure lately ruling, £10. 2s. 6d. prompt. Forward delivery looks better than it did, quotations being pretty firm at £10. 10s. to £10. 12s. 6d.

Chief prices current are:—Soda crystals £3. 2s. 6d., nett Tyne; alum in lump, £5. 10s., nett Glasgow; soda ash, 1⅜d., less 2½%, Tyne; caustic soda, white, 74°, £11. 5s., 70/72°, £10. 5s., 60/62°, £9. 2s. 6d., and cream 60/62°, £8. 17s. 6d., all nett Liverpool; bicarbonate of soda, 5 cwt. casks, £6. 15s., and 1 cwt. casks, £7. nett Tyne; refined alkali, 1 5/8d., less 5% Tyne; bleaching powder, £7. 2s. 6d. nett Tyne; saltcake, 37s. 6d.; borax, English, refined, £29. 10s. and boracic acid, £37. 10s., nett Glasgow; bichromate of potash, 3¾d., less 10% for Scotch and English deliveries (for export 3½d., less 10% f.o.b. Glasgow); bichromate of soda, 2¾d.,

less 10% for Scotch and English deliveries (for export 3½d., less 10% f.o.b. Glasgow); chlorate of potash, 5⅜d., less 5% any port; nitrate of soda, 9s. 1½d. to 9s. 3d.; sulphate of ammonia, £10. 2s. 6d. f.o.b. Leith; salammoniac, first and second white, £35. and £33., less 2½% any port; sulphate of copper, £15. less 5% Liverpool; paraffin scale (hard), 2$\frac{15}{16}$d., and soft 2$\frac{15}{16}$d. to 3d. per lb.; paraffin wax, 120°, semi-refined, 3⅜d. to 4d.; paraffin spirit (naphtha), 7d. a gallon; paraffin oil (burning) 5d., 5¼d. and 5½d. according to kind, at works for Scotch buyers (English orders about 1d. lower); ditto (lubricating), 865°, £3. 15s. to £4., 885°, £5. 5s. to £7., and 890/895°, £6. to £8. Week's imports of raw sugar at Greenock were 33,072 bags.

THE LIVERPOOL MINERAL MARKET.

Considering the nearness to the close of the year the market remains very firm. Manganese: There are two arrivals to report this week, but they have gone totally into consumption, besides further large quantities from stock. Sales made at advanced figures. Borate, 6¼d. per lb.; sulphate, £21. 10s.; oxalate, 1s. 6d. per lb.; chloride, £15.; carbonate, £12. 10s., steady. Magnesite: Raw lump rather quiet. Raw ground, £6. 10s. and calcined, £12. 10s. Bauxite (Irish Hill brand) continues in strong demand, bringing full prices; lump, 20s.; seconds, 16s.; and thirds, 12s. French chalk: Arrivals larger, and sales well maintained for G.G.B. "Angel White" brand; silvery, 90s. to 92s. 6d.; prime quality, 90s. to 95s.; superfine, 105s. Barytes: Carbonate, prime lump still scarce, being quoted at 90s. to 95s.; nuts, 70s. to 80s.; whilst finest white sulphate is steady. "Angel White," No. 1, 70s.; No. 2, 60s. to 65s.; No. 3, 45s. Pumice-stone easier. Iron ore easy: Manganiferous, Santander, Bilbao, Irish, and Cumberland firmer. Emerystone steady, No. 1 lump £5. 10s. to £6., smalls £5. to £5. 10s. Fullers' earth better; best lump, 55s.; fine impalpable ground, £7.; "Emerald" ground, 80s. Scheelite, wolfram, tungstate of soda, and tungsten metal in strong demand. Chrome ore: Arrivals are nil, whilst inquiries for spot delivery have somewhat increased, and prices are firmer for forward delivery. Antimony ore and metal firmer. Asbestos firm. Potter's lead ore of best quality steady; smalls, £12. 10s. to £13. 15s.; selected lump, £14. 10s. to £15. 10s. Calamine quiet. Strontia sulphate (celestine) little doing. Limespar more doing, especially for English manufactured, old G.G.B. brand in demand at 50s (ground). Felspar quiet. Fluorspar: In best quality there is more doing. Ferro Manganese firmer, 75%, £12.; 85%, £13. 15s. Plumbago brisk: Spanish, £5.; best Ceylon lump at last quotations; Italian and Bohemian, £4. to £12. per ton. "Founders," £5. to £6.; Blackwell's "Mineraline," £10. French sand, 20s. to 22s. 6d. Ground mica, £45. to £50. China clay steady; common, 18s. 6d.; good medium, 22s. 6d. to 25s.; best, 30s. to 35s. (at Runcorn). Bog ore (oxide of iron) steady; finest quality, 22s. to 23s.

THE LIVERPOOL OIL AND COLOUR MARKET.

LIVERPOOL, TUESDAY.

COLOURS are quiet. Ochres: Oxfordshire, common, £10., medium, £12., best, £15.; Derbyshire, common, 40s., medium 50s., best, 60s. Welsh, best, 70s., seconds, 50s., and common, 18s.; Irish, Devonshire, 40s. to 45s.; French, J. C., 55s. to 60s.; M. C., 65s. to 67s. 6d.; Umber: Turkish quiet. Devonshire, 50s. to 55s. White lead, red lead, and oxide of zinc unchanged. Venetian red, £6. 10s. to £10. Cobalt: Prepared oxide, 10s. 6d.; black, 9s. 9d.; blue, 6s. 6d. Zaffres: No. 1, 3s. 6d.; No. 2, 2s. 6d. Oxide of iron: common, £6.; medium, £10.; finest, £20.

OILS.—This market has been closed for the Christmas and New Year holidays, and consequently there has been but little doing, a holiday feeling pervading the market in general. Palm oil is particularly quiet; there have been no sales. Olive, though quiet, is steady, and prices are unchanged, with Neapolitan at £39., while Candia and Corfu are unchanged. Linseed is steady at last week's prices, and though the market is quiet holders remain firm. In Rape, refined Stettin is slow of sale, but it is still quoted at 32s. 6d. to 33s per cwt. Cottonseed: Liverpool refined was in fair request, but has declined again slightly, now being quoted at 19s. per cwt. Castor oil was flat at the opening of the market, with good seconds Calcutta at 2¾d. to 2⅞d., first pressure French 2⅞d. per lb., but the general tone is somewhat better do-day. Tallow is firm with a good demand. In resin there is a fair business for common at 5s. to 5s. 3d., medium 5s. 6d. to 7s., fine 7s. 6d. to 10s. per cwt. Spirits of turpentine are slightly improved, and remain firm at 26s. per cwt. Petroleum is firm with a good demand, with American at 5⅝d. to 6⅝d. according to quality, and Russian refined 4½d. to 4⅝d. per gallon.

THE METAL MARKETS.

LONDON, WEDNESDAY.—Pig iron firm; Scotch warrants closed at 47s. cash. Middlesbrough 37s. 9d. cash, and hematite 47s. 8d. cash. Copper firm; Chili bars, G.O B's. and G.M B's. closed at £46. 2s. 6d. cash, and £43. 13s. 9d. to £47. 1s. three months. Tin steady; Straits closed at £90. 12s. 6d. to £91. 2s. 6d. cash, and £90. 18s. 9d. to £91. 7s. 6d. three months. Australian, £90. 15s. cash; English ingots, £94. Lead: Spanish, £11. 5s. to £11. 6s. 3d.; English, £11. 7s. 6d. to £11. 12s. 6d. Silesian spelter, ordinary, firmer, £22. 12s 6d. Quicksilver slow: First hands, £8., second hands, £7. 14s. Copper shares firm; Cape 1⅞ to 2; Copiapo 2⅜ to 2½; Libiola 2⅞ to 3; Mason and Barry 4$\frac{13}{16}$ to 4$\frac{15}{16}$; Rio Tinto 18½ to 18⅝; Tharsis 5⅞ to 6; Namaqua 1½ to 1⅜; Panulcillo ⅞ to 1.

GLASGOW, TUESDAY.—Market flat, with good business. Scotch done at 47s. 1d and 47s. cash; closing buyers at 47s. cash, sellers ask ½d. more. Middlesbrough done at 37s. 9d. and 37s. 9½d. cash; closing with buyers at 37s. 9d. cash, and 38s. one month, sellers 1d. higher. Hematite done at 47s. 8½d. cash, also at 48s. 1d. and 47s. 11d. one month, closing with buyers at 47s. 8d. cash, and 47s. 10½d. one month, sellers ask ½d. more.

WOLVERHAMPTON, WEDNESDAY.—In anticipation of the quarterly meeting business to-day was largely postponed. The meetings are fixed for January 13th and 14th. Marked bars seem likely to be redeclared at £8., second-class bars, £7; merchant bars, £6. 10s.; common, £6. 5s. Sheets are in slow sale at £7. 5s. singles and £7. 15s. doubles. These prices are a reduction on two years back of £3. 10s. Pigs firm at 46s. 6d. to 47s for midland sorts, and 65s. for Staffordshire best.

The Patent List.

This list is compiled from Official sources in the Manchester Technical Laboratory, under the immediate supervision of George E. Davis and Alfred R. Davis, who report professionally upon the value of Chemical Patents.

APPLICATIONS FOR LETTERS PATENT.

Dyeing Apparatus. B. Haigh. 21,801. December 14.
Purifying Molten Glass. M. Epstein. 21,826. December 14.
Improvement in Water Motors and Turbines. W. G. Potter. 21,825. December 14
Smoke Consuming Furnaces. J. R. G. Preston and W. Preston. 21,844. December 14.
Improvement in Gas, Petroleum, and Similar Engines. G. H. Bartlett. 21,868 December 14th.
Voltaic Batteries. H. H. Lake 21,870. December 15.
Nitrate of Potassium as a Remedy for Asthma. B. Piffard. 21,873. December 15.
Process and Apparatus for the Manufacture of Gas. W. Fairweather. 21,883. December 15.
Mineral Oil Burner. J. A. Vagner. 21,924. December 15.
Smoke Consuming Furnaces. W. Blazenall & M. Byrnes. 21,940. Dec 15.
Colouring Matters from Naphthyl-Glycines. E. von Portheim. 21,949. December 15.
Coating Metallic Articles with Lead. W. P. Breeding. 21,950. Dec. 15.
Manufacture of Alkaline and Earthy Alkaline Bases by Electrolysis. E. Hermite and A. Dubosc. 21,959. December 15.
Obtaining Sulphate of Soda, Sulphuric Acid, Nitric Acid, Hydrochloric Acid from Bisulphate of Soda. E. J. Barbier. 21,969. Dec. 15
Improvements in the Manufacture of Nitric Acid. A. Vogt. 22,018. December 16.
Brick and Tile Making Machines. G. Herrold. 22,038. December 16.
Evaporating Saccharine and other Liquids. P. Laberie. 22,089. Dec. 17.
Improvements in the Manufacture of Casks. A. Welin. 22,107. Dec. 17.
Improved Turbine. J. Craig. 22,125. December 17.
Secondary Batteries. A E. Porter. 22,126. December 17.
Manufacture of Artificial Fuel. A. Edelmann. 22,149. December 18.
Improvements in the Manufacture of Cyanides. G. T. Beilby. 22,167. December 18.
Secondary Batteries. F. Morin. 27,178. December 18.
Alloys of Lead. C. J. L. Leffler. 22,207. December 19.
Improvements in the Manufacture of Margarine. W. McDonnell. 22,229. December 19.
Mineral Water Apparatus. J. W. Galloway and J. G. Chapman. 22,233. December 19.
Utilising Carbonic Acid Gas obtained during Fermentation. J. Pullman and H. S. Elworthy. 22,248. December 19.
Separating Volatile Liquids. L. J. P. Pontallie. 22,253. December 19.
Freezing Machines. T. E. Halford. 22,259. December 19.

New Companies.

CARPATHIAN PETROLEUM SYNDICATE, LIMITED.—This company was registered on the 19th ult., with a capital of £40,000., in £1. shares, to adopt an agreement dated December 15th, 1891, between Mr. R. E. Goolden of the first part, Mr. G. Adams of the second part, the Agency and Exploration Company of Australasia

Limited, of the third part, and C. J. Barrett (for this company) of the fourth part and to search, prospect, examine, and explore in Galicia, Austria, Hungary, and elsewhere, for petroleum, ozokerit, bitumen, mineral oils, etc. The subscribers are:

	Shares.
T. Denny, 105, Gresham House, E.C., engineer	1
T. J. Denny, 105, Gresham House, E.C., engineer	1
C. J. Barrett, 11, Queen Victoria-street, E.C., accountant	1
C. Tottenham, 1, Grosvenor-place, S.W.	1
C. A. Underwood, 11, Queen Victoria-street, E.C., accountant	1
E. G. Barrett, 11, Queen Victoria-street, E.C., solicitor	1
A. E. Laybourn, 31, Burghley-road, Hornsey, clerk	1

Essential Oils Company, Limited.—This company was registered on the 16th ult., with a capital of £6,000. in £10. shares, to carry on the business of growers and producers of wood, oils, and other products, planters, distillers, merchants, dealers, and manufacturers. The subscribers are:—

	Shares.
A. E. Tylor, 45, Leadenhall-street, E.C.	1
F. J. Hanbury, 37, Lombard-street, E.C., wholesale druggist	1
E. B. Livingston, 22, Great St. Helen's, E.C, shipbroker	1
C. Hanbury, 37, Lombard-street, E.C., wholesale druggist	1
W. L. Bright, 45, Leadenhall-street, E.C, shipowner	1
C. Livingston, 22, Great St. Helen's E.C., shipbrcker	1
E. W. Morgan, 3, Fenchurch-buildings, E C., merchant	1

James G. Cochrane and Co., Limited.—This company was registered on the 16th ult., with a capital of £10,000., in £50. shares, to carry on the business of oil and tallow manufacturers, and offal merchants. The subscribers are:—

	Shares.
J G. Cochrane, 40, Tipping-street, Ardwick, Manchester	1
R. J. Drawen, 174, Oxford-road, Manchester	1
J. Perkins. 1. Belmont-terrace, Rusholme, Manchester	1
J. Cryer, 41, Robert-street, Manchester	1
A. J. Cochrane, 33, Molyneux-street, Chorlton-on-Medlock	1
J. Midgley, junr., Grange-over-Sands, farmer	1
W. J. Graham, 12, Bank-street, Manchester	1

Natural Science Periodical Co., Limited.—This company was registered on the 16th ult., with a capital of £1,000., in £1. shares, to establish a scientific journal or periodical.

Samuel Dawson and Company, Limited.—This company was registered on the 16th ult., with a capital of £10,000., in £10. shares, to acquire and carry on the Harpurhey Bleach Works, Harpurhey, near Manchester, and with a view thereto to enter into an agreement with S. Dawson on the terms of a draft mentioned in Clause 3 of the articles. The subscribers are:—

	Shares.
S. Dawson, Highfield House, Harpurhey, Manchester	1
S. H. Ellerbeck, 11, Oak-road, Crumpsall, Lancs.	1
F. T. Dawson, Urmston, Lancs.	1
W. H. Lewis, Northern Grove, Didsbury, Lancs	1
J. Lewis, Northern Grove, Didsbury	1
D. Ellerbeck, 25, Sunny Mount, Radcliffe	1
J. McCraith, Greave, Romiley	1

Gazette Notices.

PARTNERSHIPS DISSOLVED.

T. Kenyon, J. W. Jones, and J. Crabtree, under the style of J. Walker and Company, Manchester, gum and starch manufacturers, drysalters and chemical manufacturers.

J. Pollock and E. C. White, under the style of the Licensed Victuallers' mineral water company, Elthorne-road, Upper Holloway, mineral water manufacturers.

BANKRUPTCY ACTS 1883 AND 1890.

Receiving Orders.

Spencer, Robert, Birmingham, chemist.

Steel, James, and Wood, Leonard B. (trading as Steele and Wood, and Beach and Adams), Stoke-upon-Trent and Cobridge, tile and majolica manufacturers.

Kuhn, Bernhard Wilhelm, St. Mary Hill, City and Croydon, drysalter.

Adjudications.

Homard, Charles Newcut, Lambett, glass manufacturer.

Harding, Samuel Jervis, Market, Drayton chemist and druggist.

IMPORTS OF CHEMICAL PRODUCTS

AT

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending December 17th.

Acetic Acid—		
Holland,	100 pks.	A. & M. Zimmermann
,,	400	Beresford & Co.
Acetanill—		
Holland,	10 pks.	B. & N. Wf. Co.
Amyl Acetate—		
Germany,	5 pks.	F. Stahlschmidt & Co.
Barytes—		
Germany,	23 cks.	Ward & Co.
,,	23	Pillow, Jones & Co.
Holland,	47	Storer & Son
,,	23	W. Harrison & Co.
Belgium,	27	J. L Lyon & Co.
France,		24 pks. Brougham Young
Germany,	23	W. Harrison & Co.
,,	19	P. Jantzen
Barium Chloride—		
Holland,	27 pks.	Petri Bros.
Caoutchouc—		
Germany,	7 c.	Anderson, Weber & Smith
,,	50	Prop. Bull Wf.
Inhambane,	39	L. & I. D. Jt. Co.
Mozambique,	17	Clarke & Smith
Nossi Be,	44	Wallace Bros.
U. S.,	24	L. & I. D. Jt. Co.
Zanzibar,	136	Clarke & Smith
Uruguay,	55	Prop. Bull Wf.
Zanzibar,	52	L. & I. D. Jt. Co.
Carbolineum—		
Holland,	10 pks.	J. Owen
Caustic Potash—		
France,	34 c.	Petri Bros.
Caustic Soda—		
Holland,	499 c.	Krayer, Back & Co.
Chemicals (*otherwise undescribed*)		
Denmark,	£7	Bailey & Leetham
,	8	M. D. Co.
Germany,		10 pks. Burton & Son
Holland,	£9	J. Owen
Germany,	71	T. H. Lee
,,	129	A. & M. Zimmermann
,,	10	Craven & Co.
,,	1	Phillipps & Graves
Copper Sulphate—		
Germany,	40 pks.	W. J. Crook
Cream of Tartar—		
Italy,	4 pks.	E. & E. Arbib
,,	62	Seager, White & Co.
France,	3	T. Ronaldson & Co.
Spain,	10	W. C. Bacon & Co.
Dyestuffs (*otherwise undescribed*)		
Zanzibar,	12 pks.	Gray, Dawes & Co.
Dyestuffs—		
Cochineal		
Canary,	13 pks.	Bruce & White
,,	18	J. Goddard & Co.
,,	8	Hicks, Nash & Co.
,,	37	Swainston & Co.
,,	10	Forwood Bros. & Co.
,,	9	Marshall & French
Cutch		
Rangoon,	200 pks.	Phillipps & Graves
,,	25	Barber & Co.
Extracts		
U. S.,	100 pks.	Burton & Sons
,,	63	G. B. Mackereth
Canada,	200	Boutcher, Mortimer & Co.
U. S.,	50	C. A. Spencer
Denmark,	2	Lorensen & Co.
France,	1	J. Blank
Belgium,	40	T. H. Lee
France,	44	Carey & Son
Gambier		
Germany,	117 pks.	Prop. Butlers Wf.
Singapore,	160	J. T. & J. Powell
Myrabolams		
E. Indies,	643 pks.	Alpe & Co.
Sumac		
Italy,	200 pks.	M. D. Co.
Tanners' Bark		
Belgium,	23 t.	J. Kitchin, Ld.
Natal,	26	Hicks, Nash & Co.
Valonia		
A. Turkey,	31 t.	A. & W. Nesbitt
Farina—		
Germany,	50 pks.	Becker & Ulrich
Holland,	160	Seaward Bros.
,,	30	J. Knill & Co.
,,	30	Hicks, Nash & Co.
,,	50	J. Knill & Co.
Germany,	100	Hernu, Peron & Co.
Glucose—		
Holland,	20 pks. 160 c.	J. Knill & Co.
U. States,	500 500	J. Forsey
,,	350 350	R. G. Hall & Co.
Holland,	200 200	Prop. Sun Wf.
France,	200 200	Barber & Co.
,,	27 77	Prop Chmblns. Wf.
,,	100 816	J. Greig
U. S.,	150 847	L. Sutro & Co.
,,	50 300	J. Keiller & Son
,,	500 500	Devitt & Hett
,,	400 400	Barrett, Tagant & Co.
Germany,	25 200	Pillow, Jones & Co.
Manganese—		
Holland,	5 t.	G. Rahn & Co.
Magnesia—		
Holland,	34 pks.	A. & M. Zimmermann
Magnesium Carbonate—		
Holland,	100 pks.	Beresford & Co.
Naphtha—		
Holland,	1 cks.	Stein Bros.
Ochre—		
Holland,	6 cs.	Phillipps & Graves
France,	34	Harrison & Co.
,,	37	B. Young
Painters' Colours—		
Holland,	67 pks.	
,,	8	R. Baelz & Co.
,,	1	Mory & Co.
Germany,	32	T. Hamilton
Holland,	1 cks.	W. Harrison & Co.
Germany,	8	L. & I. D. Jt. Co.
,,	2	Phillipps & Graves
U. S.,	2	Leach & Co.
,,	133 brls.	Beresford & Co.
Germany,	11 pks.	Spies, Bros. & Co.
Holland,	2	G. Rahn & Co.
Italy,	2 cks.	W. Harrison & Co.
Holland,	1	J. Owen
Germany,	1	H. Lambert
France,	3	Bennett S. S. Co.
,,	14	Flageollet & Co.
Germany,	3 cs. 5 cks.	T. H. Lee
Paraffin Wax—		
U. S.,	610 brls.	Usmar & Co.
Pearl Ashes—		
France,	115 c.	Berk & Co.
Phosphate Rock—		
France,	120 t.	Lawes Manure Co., Ld.
Holland,	120	Anglo Cntnl. Guano Wks.
U. S,	687	Wyllie & Gordon
Plumbago—		
Germany,	12 cs.	T. H. Lee
,,	40	Poth, Hille & Co.
,,	54 cks. 170	Prop. Scotts Wf.
Potassium Permanganate—		
Germany,	10 pks.	Beresford & Co.
Potassium Prussiate—		
Holland,	2 pks.	Skilbeck Bros.
Salammoniac—		
Holland,	3 pks.	Williams, Torrey & Co.
	15	Barr, Moering & Co.

Sodium Acetate—
Belgium, 16 pks. Magee, Taylor & Co.

Sodium Hyposulphite—
Holland, 241 pks. Beresford & Co.
Germany, 182
Holland, 200 "J. Owen

Sulphur Flowers—
Holland, 20 pks. Phillipps & Graves

Tartaric Acid—
Holland, 84 pks. Bacon & Co.

Ultramarine—
Holland, 3 pks. Hernu, Peron & Co.
Germany, 11 G. Steinhoff
Belgium, 20 cks. H. Kohnstamm
" 20 Leach & Co
Germany, 5 T. H. Lee
Holland, 13 brls. G. Rahn & Co.
" 4 cks. A. G. Souter & Co.

White Lead—
Belgium, 4 cks. Lyon & Co.
Germany, 26 Rose & Co.
Holland, 2 pks. Lyons & Co.
France, 7 cs. Weatherley, Mead & Co.
Germany, 90 cks. G. Steinhoff
" 21 Randall Bros.
Holland, 18 Burrell & Co.
" 21 Storer & Sons
" 10 brls. M. Ashby
" 116 cks. T. & W. Farmiloe
Germany, 20 pks. H. Lambert

Zinc Oxide—
Holland, 276 pks. 25 brls. M. Ashby, Ld.
" 100 cks. Burrell & Co.
Germany, 65 J. Matton

Zinc Sulphate—
Germany, 21 pks. Grossewith & Ludbolt
Holland, 5 B. & N. Wf. Co.

LIVERPOOL.

Week ending December 23rd.

Acetic Acid—
Rotterdam, 17 btls.

Acetate of Lime—
Hamburg, 803 bgs.
New York, 2,377

Acid—
Havre, 53 pks. Cunard S. S. Co.

Barytes—
Antwerp, 21 cks.
Rotterdam, 22

Boracic Acid—
Leghorn, 30 cks. Shropshire Union
" 25 H. Coghill & Son
" 75

Borate of Lime—
Hamburg, 3,821 bgs.

Borax—
Havre, 38 pks. Cunard S. S. Co.

Calcium Sulphate—
Trieste, 700 bgs.
" 200 V. Pazzo

Caoutchouc—
Havre, 21 pks. Cunard S. S. Co.

Cellulose—
Rotterdam, 69 bales

Chemicals (*otherwise undescribed*)
Rotterdam, 4 cks.

Chloral Hydrate—
Rotterdam, 5 cs.
Havre, 2

Copper Pyrites—
Huelva, 1,621 t. Tennants & Co.
" 900 Matheson & Co.

Cream of Tartar—
Rotterdam, 13 cks. 40 kgs.

Dyestuffs (*otherwise undescribed*)
New York, 1 pk. W. Taylor

Dyestuffs—
Argols
Patras, 15 cs. 20 brls. Frangopulo & Co.
Bordeaux, 75 cks.
Oporto, 23 German Bank of London

Cochineal
Gd. Canary, 12 bgs. Widow, Duranty & Son
" 16 Bruce & White
" 24 Kuhner, Henderson & Co.

Cutch
Rangoon, 215 cs.

Divi divi
Hamburg, 144 bgs.

Fustic
Savanilla, 2,644 logs G. H. Muller & Co.
Salina Cruz, 206 t. Rooke, Son & Co.

Logwood
Belize, 97 t. 4 c. B. Cramer

Myrabolams
Calcutta, 447 pkts.

Saffron
Valencia, 1 cs.

Sumac
Palermo, 100 bls. J. Kitchen & Co.
" 150 970 bags

Valonia
Patras, 91 bgs. Papayanni & Jeremias
" 250 Barff & Co.

Yellow Berries
Constantinople, 28 bgs. Tamvaco, Micrulachi & Co.

Farina—
Havre, 19 pks. Cunard S. S. Co.
Rotterdam, 1,000 bgs. N. W. Jackson

French Chalk—
Rouen, 2 cs. Co-op. W'sale Scty.

Glucose—
Philadelphia, 250 brls.
New York, 590
Dunkirk, 3 cks.

Horn Piths—
Falmouth, 32,750
Paysandu, 5,270 kilos. M. E. Osterrieth & Co.

Manganese—
Gothenburg, 160 t. Macqueen Bros.

Ochre—
Rouen, 50 cks. Co-op. W'sale Scty.
" 59

Phosphate—
Belgium, 1,000 bgs. 10 t.

Phosphate Rock—
Beaufort River, 2,298 t. J. Adger & Co.

Plumbago—
Hamburg, 54 cks.

Potash—
Rotterdam, 91 cks.
Dunkirk, 67

Potash Salts—
Hamburg, 1,508 bgs.

Potassium Carbonate—
Hamburg, 3 cks.

Pyrites—
Huelva, 1,693 t.

Saltpetre—
Calcutta, 1,917 bgs.

Soap—
New York 8 bxs. T. Lucas
" 2
Leghorn, 700 Brown Bros.
Havre, 221 pks. Cunard S. S. Co.
Marseilles, 500
Rotterdam, 1 cs.

Soapstone—
Genoa, 200 bgs. G. G. Blackwell
Bordeaux, 700

Soda—
Rotterdam, 2 brls.

Sodium Nitrate—
Rotterdam, 14 cks.
Iquique, 11,725 bgs.

Stearine—
Rouen, 12 bgs. Co-op. W'sale Scty.

Sugar of Lead—
Rotterdam, 28 cks.
Rouen, 25
Hamburg, 5

Sulphur—
Catania, 1,065 bgs. 7 brls.

Tartar—
Bordeaux, 2 cks.
Naples 6

Tartaric Acid—
Hamburg, 2 cks.
Rotterdam, 28 20 kgs.

Ultramarine—
Rotterdam, 27 cks. 9 cs.

Varnish—
Antwerp, 5 brls.
Havre, 1 cs.

Verdigris—
Bordeaux, 1 ck.

Waste Salt—
Hamburg, 1,451 bgs.

White Lead—
Rotterdam, 19 cks.

Zinc Oxide—
Antwerp, 37 brls.
Hamburg, 25 cks.
New York, 200 G. Steinhoff
Bordeaux, 123 bgs.

Zinc White—
Hamburg, 40 cks.
Rotterdam, 20 O. & H. Marcus

GLASGOW.

Week ending December 22nd.

Alkali—
Rotterdam, 500 bgs.

Alum—
Hamburg, 115 cks.

Barytes—
Rotterdam, 39 cks. Jas. Rankine & Son

Barytes Sulphate—
Antwerp, 203 bgs. 20 cks.

Cellulose—
Hamburg, 490 bales

Cream of Tartar
Marseilles, 6 cks.

Dyestuffs—
Alizarine
Rotterdam, 46 cks.
Extracts
Antwerp, 13 cks.
Madder
Marseilles, 20 cks.

Ochre—
Antwerp, 56 bgs.
Marseilles, 111 cks.

Pitch—
Marseilles, 71 cks.

Potash—
Rotterdam, 21 cks.

Pyrites Sulphate—
Seville, 600 t. Seville Sulphur & Copper Co.

Rosin—
Savannah, 1,100 brls.

Soap—
Marseilles, 1 cs.

Sodium Bichromate—
Rotterdam, 160 kgs. Jas. Rankine & Son

Sodium Nitrate—
Caleta Buena, 7,245 bgs. Thomson, Aikman & Co.

Yarnish—
New York, 27 brls. 16 cs.

Waste Salt—
Hamburg, 3,294 bgs.

Zinc Oxide—
Rotterdam, 25 brls.

TYNE.

Week ending December 18th.

Acetic Acid—
Antwerp, 25 cks.

Alum Earth—
Hamburg, 17 cks. Tyne S. S. Co.

Barytes Chloride—
Rotterdam, 5 cks. Tyne S. S. Co.

Sulphur Ore—
Pomaron, 1,230 t. Harrison & Co.

Zinc Oxide—
Antwerp, 15 brls. Tyne S. S. Co.

HULL.

Week ending December 17th.

Albumen—
Hamburg, 18 cks. Wilson, Sons & Co.

Alkali—
Rotterdam, 5 cs. 2 cks. Hutchinson & Son

Alumina—
Rotterdam, 199 cks. W. & C. L. Ringrose

Barytes—
Bremen, 20 cks. Blundell, Spence & Co.
" 73
Antwerp, 45 Bailey & Leetham

Benzoic Acid—
Rotterdam, 2 cs. Lawson & Son

Chemicals (*otherwise undescribed*)
Hamburg, 19 pks. Wilson, Sons & Co.
Antwerp, 20 dms. "

Dyestuffs—
Alizarine
Rotterdam, 114 brls. 6 cs. Hutchinson & Son
" 75 cks. W. & C. L. Ringrose

Logwood
Hamburg, 50 bgs. 1,171 pcs. Wilson, Sons & Co.

Farina—
Harlingen, 50 bgs. W. & C. L. Ringrose
Ghent, 16 bxs. Lawrence & Son

Glucose—
Dunkirk, 240 bgs. Lofthouse & Co.
Rotterdam, 60 Hutchinson & Son

Manure—
Ghent, 152 t.

Nitronaphthaline—
Rotterdam, 1 ck. Lawson & Son

Ochre—
Rouen, 19 cks. Rawson & Robinson
" 25

Quicksilver—
Hamburg, 3 btls. Wilson, Sons & Co.

Salt—
Hamburg, 20 t.

Stearine—
Antwerp, 10 bgs. Wilson, Sons & Co.

Sulphate Benzodine—
Rotterdam, 2 brls. Hutchinson & Son

Ultramarine—
Bremen, 52 cks.
Rotterdam, 24 pks. Lawson & Son
Hamburg, 1 ck. Lofthouse & Co.

Yarnish—
New York, 67 pks. Wilson, Sons & Co.

Waste Salt—
Hamburg, 610 bgs. Furley & Co.

White Lead—
Rotterdam, 3 cks. Gibson Bros.

GOOLE.

Week ending December 9th.

Alum—
Rotterdam, 2 cks.

Antimony—
Boulogne, 2 cks.

Caoutchouc—
Boulogne, 5 cks.

Dyestuffs (*otherwise undescribed*)
Boulogne, 86 cks. 46 cs. 12 pks.

Dyestuffs—
Alizarine
Rotterdam, 79 cks.

Farina—
Hamburg, 1,621 bgs.
Delfszyhl, 4,000
Rotterdam, 100

Potash—
Calais, 52 dms.
Dunkirk, 3 7 cks.

Potassium Muriate—
Rotterdam, 20 cks.

Rosin—
Brunswick, 3,958 bgs.
Savannah, 3,600

Saltpetre—
Hamburg, 41 cks.
Antwerp, 203 bgs.

Waste Salt—
Hamburg, 2,018 bgs. 160 tns. 1,250 cks.

GRIMSBY.

Week ending December 12th.

Chemicals (*otherwise undescribed*)
Hamburg, 5 pks.

Farina—
Hamburg, 25 pks. 340 bgs.

Zinc Ashes—
Antwerp, 16 cks.

EXPORTS OF CHEMICAL PRODUCTS

LONDON.

Week ending December 16th.

Acids—
Cape Town, 6 cs. £17
Cologne, 199 drms. 300
Berbice, 5 21
Cape Town, 41 46

Alkali -
Trinidad, 16 c. £6
Otago, 3 t. 19 40

Alum Cake—
Bordeaux, 5 t. £22
Calcutta, 58 3 c. 193

Ammonium Carbonate—
Hamburg, 36 cks. £90
Amsterdam, 9 c. 14
Stockholm, 68 pks. 100
Dunkirk, 6 cks. 32

Ammonium Chloride—
Sydney, 7 t. 7 c. £150

Ammonium Nitrate—
Algoa Bay, 1 t. 15 c. £105

Ammonium Sulphate—
Havre, 222 t. 17 c. £2,470
Hamburg, 50 530
Demerara, 100 1,100
Philadelphia, 50 550

Barytes Sulphate—
Leghorn, 10 cks £16

Borax—
Hamburg, 8 cks. £63
Genoa, 2 t. 2 c. 145
Copenhagen, 5 17 390
Rotterdam, 10 27
Natal, 25 pks. 37

Carbonic Acid Gas—
Bombay, 30 tubes £100

Caustic Soda—
Auckland, 5 t. 7 c. £55
Napier, 6 c
Calcutta, 20 221
E. London, 6 10
Constantinople, 13 9 135

Chemicals (*otherwise undescribed*)
Cape Town, 8 cs. £72
Adelaide, 55 pks. 22
Calcutta, 10 3 66
Kurrachee, 5 41
Melbourne, 5 kgs. 29

Citric Acid—
Colombo, 1 c. £9
Hamburg, 8 kgs. 2 cks. 137
Lisbon, 5 42
Genoa, 2 t. 16 403
Aden, 2 12
Cape Town, 1 9
Melbourne, 2 3 292

Coal Products (*otherwise undes*)
Melbourne, 35 drs. £22
Sydney, 50 brls. 52

Coal Products —
Aniline
Yokohama, 5 cs. £51
Anthracene
Dusseldorf, 102 cks. £726
Benzol
Boulogne, 8 cks. £176
Rotterdam, 121 772
Coal Oil
Gothenburg, 200 brls. £100
Naphtha
Sydney, 30 drs. £14
Rotterdam, 130 pks. 780
Melbourne, 40 63
Pitch
Calcutta, 51 brls. £25
St. Nazaire, 1,150 t. 2,010
Antwerp, 677 1,200
Tar
Natal, 300 drs. £11
Adelaide, 270 £65
Hong Kong, 12 cks. 10
Melbourne, 21
Sydney, 110 pks. 1 36
Tar Oil
Paris, 14 cks. £60
Xylol
Hamburg, 8 drs. £150

Copper Sulphate—
Havre, 5 t. 3 c. £80
Genoa, 18 7 303
Bordeaux, 5 70
Antwerp, 3 8 47
Rouen, 22 4 308
Marseilles, 29 8 410
Leghorn, 18 8 266

Cream of Tartar—
E. London, 16 cs. £11
Natal, 1 t. 1 c. 102
Melbourne, 20 kgs. 95
Algoa Bay, 3 14
Sydney, 4 7 415
Brisbane, 8 44
Cape Town, 1 5

Fertilizer—
Trinidad, 35 t. £315

Guano—
Jersey, 85 t. £850
Barbadoes, 400 4,000
Demerara, 100 1,006

Manure—
Christiania, 25 t. 5 c. £140
Hamburg, 481 3 5,293
Barbadoes, 67 2 720
Natal, 14 154
Bordeaux, 45 12 290
Penang, 91 1 910
Singapore, 48 4 480
Jersey, 110 880
Jamaica, 5 28
Christiania, 50 5 280
Ghent, 1,071 bgs. 990

Nitric Acid—
Shanghai, 10 cs. £17

Phosphorus—
Algoa Bay, 4 cs. £26
Blenheim, 4 26

Potash Crystals—
Halifax, 7 c. £20

Potash Salts—
Natal, 20 t. £2,635

Potassium Chlorate—
Lisbon, 5 c. £14
Christiania, 1 cs. 24
Algoa Bay, 5 cwt. 12

Potassium Cyanide—
Shanghai, 5 cks. £26

Salammoniac—
Genoa, 3 t. 2 c £106
Samsoun, 8 15
Constantinople, 12 20

Salt Cake—
Antwerp, 250 t. £437

Saltpetre—
Lisbon, 7 t. 7 c. £152
Algoa Bay, 19 25

Silver Nitrate—
Calcutta, 1 cs. £29
Hong Kong, 2 30

Soda Crystals—
E. London, 1 t. £6
Newcastle, 16 5 c. 54
Fremantle, 3 10 15
Napier, 5 18
Colombo, 1 2 1
Cape Town, 7 10 26

Sodium Bicarbonate—
Algoa Bay, 13 c. £10
Natal, 1 t. 4 9
Launceston, 10 4

Sodium Carbonate—
Algoa Bay, 5 c. £2

Sodium Sulphate—
Ghent, 40 t. £60

Sulphur—
E. London, 3 t. 3 c. £36

Sulphuric Acid—
Natal, 37 pks. 20 cs. £43
Cape Town, 10 cbys. 6
Bombay, 18 27
Algoa Bay, 8 t. 15 c. 38
Singapore, 1 18 20

Superphosphate of Lime—
Oporto, 10 t. £40

Tartaric Acid—
Natal, 2 c. £14
Sydney, 3 19
Halifax, 5 32
Melbourne, 9 57
Kurrachee, 4 3 kgs. 45
Bombay, 3 cs. 50
Adelaide, 2 t. 244

GLASGOW.

Week ending December 22nd.

Ammonia—
Italy, 3 t. 7 c. £66

Ammonium Sulphate—
Santander, 10 t. 1¼ c. £110
Italy, 10 4 105

Coal Tar—
Boston, 50 t £110
Bombay, 17 16¼ c. 52

Coal Tar Pitch—
Philadelphia, 301 t. 3 c. £353
Rochefort, 906 7 1,495

Dyestuffs—
Turmeric
Halifax, 4 t. 9¾ c. £105

Epsom Salts—
Christiania, 300 c. £50

Farina—
Oporto, 40 c. £42

Paraffin Wax—
Santander, 6 t. 2¼ c. £212
Austria, 1 2 41
Italy, 232½ 360

Pitch—
Austria, 202 t. 19 c. £254

Potassium Bichromate—
Philadelphia, 163 c. £285
Oporto, 10 t. 5¾ 310
Drontheim, 1 ck. 6
Italy, 31 5½ 1,001

Potassium Carbonate—
Santander, 1 t. 9½ c. £30

Salt—
Chili, 3 t. 16 c. £34

Soap—
Christiania, 76 lbs. £5

Soda Ash—
Philadelphia, 100 t. 6¾ c. £526

Sodium Bichromate —
Italy, 559¼ cwt. £630

LIVERPOOL.

Week ending December 16th.

Alum—
Piræus, 4 t. 11 c. £16
Lisbon, 6 2 30
Cape Town, 1 1 5
Constantinople, 4 1 3 q. 20
Valparaiso, 1 6 7
Bombay, 36 180
Smyrna, 19 8 97
Adelaide, 2 2 10
Christchurch, 1 7

Ammonia—
Tampico, 3 c. 2 q. £7
B. Ayres, 25 cylinders 185

Ammonium Carbonate—
Ceara, 10 c. £15
Vera Cruz, 1 ck. 7
Gothenburg, 11 2 q. 20
Copenhagen, 11 1 20
Lisbon, 10 3 16
Marseilles, 19 2 30
Valparaiso, 1 t. 10 56

Ammonium Chloride—
Boston, 1 t. 15 c. £43
New York, 1 18 43
Christiania, 1 1 2 q. 18
Lisbon, 11 16
Philadelphia, 4 2 3 112

Ammonium Sulphate—
Bordeaux, 9 t. 9 c. 3 q. £100
New York, 100 19 1 1,121
Genoa, 106 9 1,302
Philadelphia, 50 11 545
Barcelona, 10 104
Ghent, 110 18 1,331
Alicante, 10 102
Demerara, 68 18 757
Valencia, 20 220

Bleaching Powder—
Calcutta, 103 cs.
Cienfuegos, 4 cks.
Havana, 20 21 brls.
Venice, 18
Ancona, 15
Baltimore, 276
Boston, 1,462
Genoa, 56
Ghent, 72
New York, 564
Philadelphia, 156
Piræus, 41
Taltal, 68

Borax—
Antwerp, 3 t. 1 c. 1 q. £91
Rotterdam, 19 27
Oporto, 10 15
San Juan, 4 7

Brimstone—
Boston, 100 t. 1 c. £506
Trinidad, 1 1 7
Otago, 50 297
Melbourne, 100 12 595
Antwerp, 2 12

Caustic Potash—
New York, 12 t. 13 c. £278

Caustic Soda—
Corfu, 40 dms.
Genoa, 132
Hamburg, 5 brls.
Karachi, 35
Malaga, 185 6 dms.
Montreal, 50
Naples, 55
New York, 1,934 112
Oporto, 6
Piræus, 18
Rio de Janeiro, 10
Santander, 124
Toronto, 25 kgs.
Trieste, 30
Valparaiso, 59
Pasages, 48
Pernambuco, 25
Philadelphia, 155
San Francisco, 150
Seville, 224 40
Sydney, 90
Tarragona, 40 40 cks
Valencia, 85 10
Alicante, 47 20
Barcelona, 460 50
Bari, 38
Beyrout, 25
Bombay, 10
Boston, 779
Brisbane, 21
Carthagena, (Spain), 48 dms. 29 brls.
Alexandria, 30
Baltimore, 170
Catania, 50
Cienfuegos, 20
Fiume, 132
La Guayra, 10
Lisbon, 90
Malta, 47
Maranham, 40
Melbourne, 30
Nuevitas, 18

Chemicals (*otherwise undescribed*)
B. Ayres, 1 t. £35
Para, 3 cs. 8
Hamburg, 1 5 c. 44
Montreal, 1 34
Portland (Maine), 10 17
Genoa, 1 2 1 q. 37
Lisbon, 1 6 2 53
Hiogo, 2 10 125

Copperas—
Volo, 4 t. 16 c. £10
Alexandria, 3 15 7
Melbourne, 4 5 9
Callao, 6 18 15
Smyrna, 11 13 1 q. 25

Copper Sulphate—
Dunedin, 1 t. £14
Bordeaux, 210 7 c. 3,358
Venice, 30 10 463
Marseilles, 29 12 403
Mexico City, 10 147
Naples, 2 6 34
Leghorn, 19 8 294
Bordeaux, 292 11 3 q. 4,617
Genoa, 5 18 2 95
Barcelona, 10 1 148

Cream of Tartar—
St. Johns, N.F., 5 c. £24

Epsom Salts—
Philadelphia, 9 brls.
Odessa, 3 cks. 10 kgs.

Manure—
Honolulu, 154 t. £1,500
Gd. Canary, 12 31
Marseilles, 120 5 c. 2 q. 616
Messina, 3 16
Penang, 23 11 236
Bordeaux, 5 3 40
Tarragona, 39 6 3 381

Oxalic Acid—
Barcelona, 5 t. 2 c. £143
Montreal, 11 cks. 100
Genoa, 1 t. 2 cwt. 38

Phosphorus—
Santander, 4 cs. £35

Potassium Bichromate –
Smyrna, 15 c. £26
Havana, 7 2 q. 12

Potassium Carbonate—
New York, 15 t. 5 c. £244

Potassium Chlorate—
Antwerp, 2 t. 10 c. £119
Philadelphia, 1 5 62
Vera Cruz, 1 5 59
Corunna, 10 24
Hamburg, 4 10 211
Santander, 1 5 59
Yokohama, 5 240
Cienfuegos, 4 9
Gothenburg, 4 188
Naples, 1 47
New York, 10 15 540
Kobe, 5 228
Philadelphia, 12 10 562

Potassium Prussiate—
Bombay, 4 c. £40

Salammoniac—
Barcelona, 1 t. 3 c. 1 q. £37

Vera Cruz, 4 cks. 39
Lamaca, 4 c. 1 q. 7
Philadelphia,2 12 86
Trieste, 1 33

Salt—
Antwerp, 50 t.
Adelaide, 2¼
Calcutta, 1,000
Cameroon, 20
C. C. Castle, 5
Isles de Los,25
Kingston, Jam.,5
Newcastle, N.S.W.,136
N. Orleans,200
Newport, 300
Norfolk, 500
Opobo, 50 4 c.
Portland, Me.,180
Rotterdam,299
Savannah, 384
Sulymah, 45
Talcahuano 1¾
Vancouver, B. C.,240
Wilmington,400
Abonnema, 10
Bakana, 10
Batu, 9
Boston, 633
Buguma, 50
Cape Lopez,11
Drammen, 20
Frederica, 790
Gaboon, 8 18
Ghent, 186
Hamburg, 22 8
Landana, 19
Loango, 8
Newcastle,225
Old Calabar,60
Pt. Natal, 4¾
Rio Del Rey,148¾
San Francisco,345 8
Wilmington,300

Salt Cake—
Santander, 40 t. 1 c. 2 q. £110
Baltimore, 259 19 696

Saltpetre—
Carthagena, 8 c. £10
Syra, 4 t. 1 q. 84
Ceara, 1 9 1 33
Santos, 5 2 7
Vancouver, B. C., 10 11
Pernambuco, 3 18 64

Soap—
Alexandria, 2 cks. 20 bxs. 5 cs.
Batavia, 1,000
Bombay, 17 1,820 8
Cadiz, 3
Callao, 3
C. C. Castle, 100 2
Curacao, 200
Genoa, 110
New York, 2 61
St. Johns, Nfld., 154 37
Valparaiso, 100 6
Accra, 80
Adelaide, 15
Abriz, 50
Antigua, 75
Antwerp, 800 css.
Barbadoes, 1,250
Bathurst, 50
Benin, 2
Buenaventura, 1
B. Ayres, 62 2
Cameroons, 330
Cape Town, 550
Carthagena, N G., 2
Christiania, 40
Colombo, 1
E. London, 1,000
Fresco, 20
Gibraltar, 200
Gd. Canary, 59
Half Jack, 43
Havre, 220
Honolulu, 100
Jamaica, 50
Kingston, Jam., 274
Karachi, 500 15
Landana, 35
Leghorn, 40
Loando, 450
Mozambique, 150
Nkombi, 20
Old Calabar, 200
Opobo, 1,370
Para, 100
Philadelphia, 25
Pt. Natal, 70
Rangoon, 500
St. Lucia, 26
Saltpond, 160
Shanghai, 700
Sherbro, 20
Singapore, 327
Sydney, 63
Trinidad, 500

Soda Alkali—
Barcelona, 100 brls.
Leghorn, 35

Soda Ash—
Baltimore,316 tcs. 240 bgs. 370 cks.
Cadiz, 4
Corunna, 5 brls.
Kingsey, 80
Puerto Cabello,20 3
Santander, 22
Sherbrooke, 96
Smyrna, 15
Wellington, 38
Beyrout, 175
Boston,84 tcs. 1,900 442
B. Ayres,369 brls.
Carthagena (Spain), 40 brls.
Chicago, 44
Cochin, 15
Constantinople,200
Ghent, 11
Malaga, 2
New Orleans, 13
New York,1,366 tcs. 800 bgs. 538
Philadelphia,696 341
Pt. Natal, 40 kgs.
Rio de Janeiro, 20 brls.
Seville, 200
Sydney, 130
Volo, 5
Zante, 60

Soda Crystals—
Venice, 20 cks.
Bombay, 150 bgs.
Boston, 280 brls.
Constantinople, 65
Smyrna, 100

Sodium Bicarbonate—
Adelaide, 60 kgs
Alexandria, 40 brls.
Brisbane, 4 cks.
Christiania, 20
Cienfuegos, 20
Corunna, 5
Dunkirk, 10
Genoa, 4
Sydney, 140
Trieste, 40
Ancona, 20 6
Auckland, 20 pks.
Bombay, 625
Hamburg, 40 19
New York,250
Santander, 20
Shanghai, 20 bgs.
Valparaiso, 100

Sodium Carbonate—
Antwerp, 58 brls.
Boston, 28

Sodium Chlorate—
Boston, 1 t. 15 c. £107

Sodium Fluorate—
Hamburg, 5 t. £60

Sodium Nitrate—
Almeria, 1 t. 14 c. 3 q. £16
Barcelona,12 7 117
Lisbon, 30 6 2 283

Sodium Phosphate—
Bombay, 6 c. £10

Sodium Silicate—
Barcelona, 48 cks.
Calcutta, 4 brls.
Carthagena (Spain). 3
Gijon, 6
Malaga, 7
Malta, 11
Santander, 4
Tunis, 15
Vigo, 20
Zante, 5

Strontia—
Rotterdam, 1 t. £6

Sulphur—
Nantes, 95 t. 4 c. £475
Madras, 14 8 120

Sulphuric Acid—
Valparaiso, 16 c. £6
Rio Grande do Sul, 6 cs. 5
Maranham, 15 8

Superphosphate—
Venice, 10 t. £29

Tartar—
Boston, 1 t. £118

Tartaric Acid—
Havana, 1 c. £7

TYNE.

Week ending December 18th.

Alkali—
Antwerp, 285 c.
Rotterdam, 60
Amsterdam, 767

Ammonium Carbonate—
Hamburg, 23 c.
Randers, 20

Ammonium Sulphate—
Venice, 101 c.
Valencia, 1,000

Arsenic—
Venice, 66 c.

Barytes—
Rouen, 262 c.

Barytes Carbonate—
Antwerp, 203 c.
Rouen, 700

Bleaching Powder—
Copenhagen, 67 c.
Bergen, 101
Antwerp, 1,898
Hamburg, 41
Christiania, 642
Rotterdam, 935
Stockholm, 83
Amsterdam, 709
Genoa, 230
Venice, 740

Caustic Soda—
Copenhagen, 624 c.
Antwerp, 210
Rotterdam, 58
Stockholm, 492
Amsterdam, 167
Genoa, 383
Salonica, 58
Venice, 107

Epsom Salts—
Constantinople, 30 c.

Litharge—
Hamburg, 10 c.
Constantinople, 12
Stockholm, 63
Rouen, 57

Magnesia—
Hamburg, 51 c.
Rouen, 3

Potassium Chlorate—
Antwerp, 20 c.

Soda—
Christiania, 106 c.
Constantinople, 71
Varna, 89
Venice, 200

Soda Ash—
Antwerp, 169 c.
Hamburg, 40
Laurvig, 403
Christiania, 601
Venice, 1,428

Sodium Silicate—
Genoa, 1,315 c.

Sodium Sulphate—
Drontheim, 6,002 c.
Venice, 800

Sulphur—
Hamburg, 1 000 c.
Christiansand, 2,000
Stockholm, 1,500

HULL.

Week ending December 15th.

Alkali—
Brisbane, 69 cks.

Bleaching Powder—
Bombay, 34 cks. 60 dms.
Stettin, 61

Borax—
Hamburg, 5 cks.

Calcium Sulphate—
Antwerp, 100 bgs.
Harlingen, 200
Rouen, 50

Caustic Soda—
Libau, 40 dms.
Hango, 1 ck

Chemicals *(otherwise undescribed)*
Amsterdam,10 cks.
Antwerp,12
Bombay,195
Christiania,25 34 cs 1,010 slabs
Copenhagen,8 23 40 pks
Danzig, 13
Gothenburg,50 5
Hamburg,3 220 50
Hango, 1
Harlingen,22 2
Kurrachee 485 100
Konigsberg,1
New York, 50
Rotterdam,34 1 1
Stettin, 10 1 10

Cotton Seed Oil—
Amsterdam, 200 c.
Antwerp, 1,084
Bremen, 384
Hamburg, 1,946
Rouen, 20
Rotterdam, 2,202
Stettin, 202

Dyestuffs *(otherwise undescribed)*
Antwerp,2 dms. 3 cks.
Bombay, 60
Danzig, 5
Hamburg, 2
Rouen, 3
Reval, 5

Linseed Oil—
Antwerp, 104 c.
Bremen, 91
Brisbane, 258
Bombay, 369
Copenhagen, 68
Christiansand, 65
Drontheim, 62
Hamburg, 125
Kurrachee, 201
Rotterdam, 4

Manure—
Antwerp, 100 t.
Dunkirk, 55
Ghent, 1,003 bgs.
Rotterdam, 341

Ochre—
Amsterdam, 4 cks.

Painters' Colours—
Antwerp, 12 cks. 15 dms. 15 pks.
Bremen, 2 cs.
Brisbane, 5 274 6
Boston, 6
Bombay, 6 30 cs. 83
Christiania,19 64
Copenhagen,6 1 6 dms.
Drontheim, 112
Gothenburg, 1
Hamburg, 33 4
New York,65
Rotterdam,9
Stettin, 6 79 t.

Pitch—
Antwerp,307 t.

Salt—
Hango, 30 c.

Tar—
Antwerp, 2 cks.
Bombay, 51

Varnish—
Amsterdam, 3 cks.
Bombay, 5 dms.
Copenhagen, 2 cs.
Kurrachee, 5

GOOLE.

Week ending December 9th.

Benzol—
Rotterdam, 59 cks. 17 dms.

Bleaching Powder—
Antwerp, 15 cks.
Rotterdam, 18

Chemicals *(otherwise undescribed)*
Antwerp, 3 cks.
Ghent, 12
Hamburg, 56

Coal Products *(otherwise undes.)*
Antwerp, 26 cks.
Boulogne, 2
Ghent, 5
Rotterdam, 77

Dyestuffs *(otherwise undescribed)*
Ghent, 5 cks.
Rotterdam, 5

Manure—
Boulogne, 47 bgs.
Bruges, 191
Dunkirk, 168
Ghent. 300
Ostend, 168

Pitch—
Antwerp,359 t.

GRIMSBY.

Week ending December 12th.

Chemicals *(otherwise undescribed)*
Antwerp,102 pks. 6 cks.
Hamburg,48 9 cs.

Coal Products—
Dieppe, 118 cks.

Dyestuffs *(otherwise undescribed)*
Dieppe, 15 cks.

PRICES CURRENT.

WEDNESDAY, DECEMBER 30, 1891.

PREPARED BY HIGGINBOTTOM AND CO., 116, PORTLAND STREET, MANCHESTER.

The values stated are F.O.R. at maker's works, or at usual ports of shipment in U.K. The price in different localities may vary.

	£	s.	d.
Acids:—			
Acetic, 25 %, and 40 % .. .. per cwt.	7/- & 11/-		
,, Glacial .. .. ,,	51/-		
Arsenic, S.G., 2000° .. .. ,,	0	13	6
Fluoric .. .. per lb.	0	0	3¼
Muriatic (Tower Salts), 30° Tw. .. .. .. per bottle	0	0	10
,, (Cylinder), 30° Tw. .. .. ,,	0	3	0
Nitric 80° Tw. .. .. per lb.	0	0	2¼
Nitrous .. .. ,,	0	0	1¾
Oxalic .. .. nett ,,	0	0	3¼
Phosphoric, 1750° .. .. ,,	0	1	2
Picric .. .. ,,	0	0	10¼
Sulphuric (fuming 50 %) .. .. per ton	15	10	0
,, (monohydrate) .. .. ,,	5	10	0
,, (Pyrites, 168°) .. .. ,,	3	5	0
,, (,, 150°) .. .. ,,	1	5	0
,, (free from arsenic, 145°) .. .. .. ,,	1	7	6
Sulphurous (solution) .. .. ,,	2	15	0
Tannic (pure) .. .. per lb.	0	1	2
Tartaric .. .. ,,	0	1	1½
Arsenic, white powdered .. .. nett per ton	11	0	0
Alum (loose lump) .. .. ,,	5	5	0
Alumina Sulphate (pure) .. .. ,,	5	0	0
,, ,, (medium qualities) .. .. .. ,,	4	15	0
Aluminium .. .. per lb.	0	5	0
Ammonia, ·880=28° .. .. per lb.	0	0	3
,, =24° .. .. ,,	0	0	1¾
,, Carbonate .. .. nett ,,	0	0	3½
,, Muriate .. .. per ton	21	0	0
,, ,, (sal-ammoniac) 1st & 2nd .. per cwt.	35/- & 33/-		
,, Nitrate .. . . per ton	40	0	0
,, Phosphate .. .. per lb.	0	0	10½
,, Sulphate (grey), London .. .. .. per ton	10	5	0
,, ,, (grey), Hull .. .. ,,	10	5	0
Aniline Oil (pure) .. .. per lb.	0	0	8¼
Aniline Salt ,, ... ,,	0	0	7¼
Antimony .. .. per ton	70	0	0
,, (tartar emetic) .. .. per lb.	0	1	0
,, (golden sulphide) .. .. ,,	0	0	10
Barium Chloride .. .. per ton	7	15	0
,, Carbonate (native) .. .. ,,	3	10	0
,, Sulphate (native levigated) .. . .. ,,	45/- to 75/-		
Bleaching Powder, 35 % .. .. nett ,,	7	10	0
,, Liquor, 7 % .. .. ,,	2	10	0
Bisulphide of Carbon .. .. ,,	11	15	0
Chromium Acetate (crystal .. .. per lb.	0	0	6
Calcium Chloride .. .. per ton	2	5	0
China Clay (at Runcorn) in bulk .. .. .. ,,	17/6 to 35/-		
Coal Tar Dyes:—			
Alizarine (artificial) 20 % .. .. per lb.	0	0	8¼
Magenta .. .. ,,	0	3	9
Coal Tar Products			
Anthracene, 30 % A, f.o.b. London .. per unit per cwt.	0	1	2½
Benzol, 90 % nominal .. .. .. per gallon	0	2	4
,, 50/90 ,, ... ,,	0	1	9
Carbolic Acid (crystallised 40°) .. .. .. per lb.	0	0	5⅛
,, (crude 60°) .. .. per gallon	0	1	2
Creosote (ordinary) .. .. ,,	0	0	1½
,, (filtered for Lucigen light) .. .. ,,	0	0	3
Crude Naphtha 30 % @ 120° C. .. .. .. ,,	0	1	3
Grease Oils, 22° Tw. .. .. per ton	2	5	0
Pitch, f.o.b. Liverpool or Garston .. .. .. ,,	1	14	0
Solvent Naphtha, 90 % at 160° .. .. .. per gallon	0	1	3
Coke-oven Oils (crude) .. .. ,,	0	0	3
Copper .. .. per ton	46	2	6
,, Sulphate .. .. ,,	14	15	0
,, Oxide (copper scales) .. .. ,,	45	0	0
Glycerine (crude) .. .. ,,	15	0	0
,, (distilled S.G. 1250°) .. .. ,,	51	10	0
Iodine .. .. nett, per oz.	0	0	9
Iron Sulphate (copperas) .. .. per ton	1	15	0
,, Sulphide (antimony slag) .. .. ,,	2	0	0
Lead (sheet) for cash .. .. ,,	12	17	6
,, Litharge Flake (ex ship) . .. . ,,	15	0	0
,, Acetate (white ,,) . .. . ,,	26	15	0
,, ,, (brown ,,) .. .. .. ,,	18	10	0
,, Carbonate (white lead) pure .. .. .. ,,	20	0	0
Nitrate .. .. ,,	20	10	0
Lime, Acetate (brown) .. . . per ton	7	5	0
,, ,, (grey) .. .. ,,	10	5	0
Magnesium (ribbon and wire) .. .. per oz.	0	2	3
,, Chloride (ex ship) .. .. per ton	2	7	6
,, Carbonate .. .. per cwt.	1	17	6
,, Hydrate .. .. per ton.	17	0	0
,, Sulphate (Epsom Salts) .. .. .. per ton	3	0	0
Manganese, Sulphate .. .. ,,	17	15	0
,, Borate .. .. per cwt.	2	15	0
,, Ore, 70 % .. .. per ton	4	5	0
Methylated Spirit, 61° O.P. .. .. per gallon	0	2	6
Naphtha (Wood), Solvent .. .. ,,	0	4	5
,, ,, Miscible, 60° O.P. .. .. .. ,,	0	5	3
Oils:—			
Cotton-seed .. .. per ton	19	5	0
Linseed .. .. ,,	20	10	0
Lubricating, Scotch, 890°—895° .. .. .. ,,	7	5	0
Petroleum, Russian .. .. per gallon	0	0	4½
,, American .. .. ,,	0	0	5½
Potassium (metal) .. .. per oz.	0	3	10
,, Bichromate .. .. per lb.	0	0	3¾
,, Carbonate, 90% (ex ship) .. .. .. per ton	19	0	0
,, Chlorate .. .. per lb.	0	0	5¾
,, Cyanide, 98% .. .. ,,	0	2	3
,, Hydrate (Caustic Potash) 80/85 % .. per ton	23	0	0
,, ,, (Caustic Potash) 75/80 % .. ,,	21	5	0
,, ,, (Caustic Potash) 70/75 % .. ,,	20	15	0
,, Nitrate (refined) .. .. per cwt.	1	2	6
,, Permanganate .. .. per cwt.	3	5	0
,, Prussiate Yellow .. .. per lb.	0	0	10¼
,, Sulphate, 90 % (ex ship) .. .. .. per ton	9	15	0
,, Muriate, 80 % (do.) .. .. .. ,,	7	17	6
Silver (metal) .. .. per oz.	0	3	7¾
,, Nitrate .. .. ,,	0	2	10
Sodium (metal) .. .. per lb.	0	4	0
,, Carb. (refined Soda-ash) 48 % .. nett per ton	6	5	0
,, ,, (Caustic Soda-ash) 48 % . ,, ,,	5	5	0
,, ,, (Carb. Soda-ash) 48% .. .. ,, ,,	5	7	6
,, ,, (Carb. Soda-ash) 58 % .. .. ,, ,,	6	7	6
,, ,, (Soda Crystals) .. .. .. ,, ,,	3	9	0
,, Acetate (ex-ship) .. .. ,,	18	10	0
,, Arseniate, 45 % .. .. ,,	10	15	0
,, Chlorate .. .. per lb.	0	0	7
,, Borate (Borax) .. .. nett, per ton.	28	10	0
,, Bichromate .. .. per lb.	0	0	2¾
,, Hydrate (77 % Caustic Soda) (f.o.b.) nett pr. ton (10 ton lots)	11	10	0
,, ,, (74 % Caustic Soda) ,, ,, ,, (10 ton lots)	11	5	0
,, ,, (70 % Caustic Soda) ,, ,, ,, (10 ton lots)	10	5	0
,, ,, (60 % Caustic Soda) .. ,, ,, (10 ton lots)	9	2	6
,, ,, (60 % Caustic Soda, cream) (f.o.b.) ,, (10 ton lots)	8	17	6
,, Bicarbonate .. .. ,,	6	15	0
,, Hyposulphite .. .. ,,	8	5	0
,, Manganate, 25% .. .. ,,	9	0	0
,, Nitrate (95 %) ex-ship Liverpool .. .. per cwt.	0	9	3
,, Nitrite, 98 % .. .. per ton	30	0	0
,, Phosphate .. .. ,,	16	10	0
,, Prussiate .. .. per lb.	0	0	8
,, Silicate (glass) .. .. per ton	5	7	6
,, ,, (liquid, 100° Tw.) .. .. .. ,,	4	7	6
,, Stannate, 40 % .. .. per cwt.	3	5	0
,, Sulphate (Salt-cake) .. .. per ton.	1	17	6
,, ,, (Glauber's Salts) .. .. ,,	1	15	0
,, Sulphide .. .. ,,	7	15	0
,, Sulphite .. .. ,,	6	10	0
Strontium Hydrate, 100% .. .. ,,	8	10	0
Sulphocyanide Ammonium, 95 % .. .. per, lb.	0	0	8
,, Barium, 95 % .. .. ,	0	0	5
,, Potassium .. .. ,	0	0	8½
Sulphur (Flowers) .. .. per ton.	10	0	0
,, (Roll Brimstone) .. .. ,,	8	0	0
,, Brimstone: Best Quality (nominal) .. ,,	6	10	0
Superphosphate of Lime (26 %) .. .. ,,	2	16	3
Tallow .. .. ,,	26	10	0
Tin (English Ingots) .. .. ,,	94	0	0
,, Crystals .. .. per lb.	0	0	6¾
Zinc (Spelter) .. .. per ton	22	12	6
,, Chloride (solution, 96° Tw.) .. .. ,,	6	15	0

THE

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Notices.

Communications for the Editor, if intended for insertion in the current week's issue, should reach the office not later than **Tuesday morning.**

Advertisements intended for insertion in the current week's issue should reach the office by **Wednesday morning** at the latest

The Terms of Subscription, commencing at any date, to the *Chemical Trade Journal*,—payable in advance,—including postage to any part of the world, are as follows:—

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THE FOG AND THE GAS SUPPLY.

IF we glance back at the state of the weather during the last three weeks, it will be apparent to most, we think, that gas companies have been having a good time of it. At least they ought to have been.

The seasonable change which took place in the weather about a week before Christmas, produced, as is generally the case in the Metropolis and all our large cities and towns, along with the frost, that faithful and far-reaching follower, Fog.

But, despite the inconvenience which the presence of a genuine city fog engenders, in accordance with the proverbial ill wind, it also at the same time heralds the advent of the harvest-time for the various gas companies and undertakings.

Naturally, the feelings of those who have perforce to consume the gas, may be expected at such times to be somewhat ruffled, and it is not to be wondered at, if, in addition to the inconveniences attending the fog, the gas supply itself becomes so limited, as to cease to be a source of light by merely rendering darkness visible, that consumers begin to give vent to their feelings in terms which are neither minced nor measured.

To the generality of people, the occurrence of a fog is looked upon as a means by which gas companies can clear out old stock. The companies standing as they virtually do, as vendors of a commodity in the form of gas, should be expected to grasp with avidity such an opportunity for thus making a clean start, in the same way that any other vendor would; whilst, in the case of corporations, the ratepayers should have a certain amount of consolation in the thought that the extra demand for gas should afford a profit, which would enable either a reduction in price, or further improvements in the quality and supply of their gas to be made.

But not so, however, does the case seem to be. Instead as being, as one would expect, subduedly in high feather; when confronted with the well-justified complaints of the consumers on account of the utter incapacity of the supply, they seem to consider that it is themselves who ought to be looked upon as the martyrs; *they* are the persons who are so hard done by, and they keep reiterating as if it was a hardship, that do what they will their stock keeps on decreasing, because the demand is so great.

If it is hard on them, how much harder is it on the unfortunate victims of their unreadiness, who, powerless to forestall their wants, are compelled to absolutely cease work, in many cases for nearly a whole day, just in the middle of one of the busiest weeks in the year.

The matter, as things are at present, where so many works are dependent upon gas as their motive power, apart from its use as a source of light and heat, is a most important one; and the experiences of the past month are calculated to make those who have hitherto been solely dependent on gas

take steps to secure a more stable source of supply for the future, whilst those who contemplated the use of gas for similar purposes would naturally begin to entertain serious doubts as to the advisability of putting too much confidence in the infallibility of such a power-supplying agent.

We are fully acquainted with the fact that extensions, well on the way to completion, are being made, which, it is anticipated, will in many cases prevent the possibility of such shortness of supply occurring again, but ought such an occurrence to have taken place? Corporations have for long enough now been advocating the use of gas (at a reduced figure in some instances) for heating and power producing purposes, in order to abate the production of smoke and its attendant evils, whilst in the meantime they have been frittering away their profits in visionary street improvements. Consequently, when it is found absolutely necessary to increase the producing and storing accommodations, in order to meet extraordinary demands, the Local Government Board has to be appealed to, and a loan obtained to effect these improvements.

That the extra pressure brought about by the frequent fogs prevailing at this time of the year puts an undue strain on the resources of the gas works, the experience of the last two or three years has declared in language which was as plain as it was possible for figures to speak. Yet the oft repeated warnings have not been sufficiently poignant to prevent, in some cases, the improvements being made just too late to avert the break down which they were intended to preclude.

And even when the present improvements have been completed, if, as the advances of the past indicate, the use of gas for heating and driving machinery is to be extended, it will be necessary to commence making provision to meet the still greater demand with which the gas supply will be taxed in the future. Unless such provisions are made, owing to the increase in the daily consumption the pressure in the case of emergencies will still be felt just as much as it has been during the last month; because the proportion which the reserve production bears to the regular consumption will be the same then as it is to-day.

Whilst, in conclusion, let us add that in those cases where new arrangements have been promised, may we not be disappointed in hoping that, while the quantity of the gas will be increased when there is any extra stress laid on the demand, one or two anomalies in the quality of the gas supplied may likewise be conspicuous by their absence, For it is quite easy to understand the purity of the gas suffering through insufficient purification, on account of the rapidity with which it is necessary to transfer the gas from the retorts to the holders; but seeing that by hastening the charging and drawing operations in the retorts only the richest portions of the gas produced are obtained, it seems strange that the illuminating power should experience such a marked deterioration. Unless, of course, the rich gas became accidentally contaminated on its way to the holder with a certain proportion of a mixture of two very familiar gases other than hydrocarbons.

Sharpening Files and Tools.—The Paris Societe d'Encouragement publishes particulars of an electro-chemical method of sharpening files and other tools, devised by Mons. Personne. The inventor immerses the files, which have first been thoroughly cleaned of grease, for 20 minutes suspended from a metal plate, in a mixture of 100 parts water, 6 parts nitric acid and 3 parts sulphuric acid. The plate is placed in connection with a number of carbons immersed in the same liquid. The corrosion of the metal takes place in the cavities only, so that the edges are sharpened in exactly the same manner as if the operation had been performed by a file cutter. The process is stated to be very satisfactory.

OXIDISING METALLIC ARSENIDES BY ELECTRICITY.

By Lee K. Frankel.

(*Concluded from page 3.*)

Orpiment (As_2S_3).—The preliminary investigations made with this mineral showed that it came under the same category as the metallic arsenic. When the finely powdered mineral was introduced into the molten caustic potash, a volatilisation of the arsenic, recognisable by its odour, occurred. The precautions given under metallic arsenic, regarding the cooling of the caustic potash and the regulation of the current, were then introduced with successful results. Some difficulty may at first be experienced in obtaining correct control of the operation, but a few oxidations will give the operator sufficient experience to bring the decomposition to a successful completion. The conditions best adapted for the work are a current of one ampère, 25—30 grams. of caustic potash, the current being allowed to run for thirty minutes. Using these conditions, no arsenic was found in the slight residues which remained after decomposing the fusion, nor was any odour of arsenic perceptible during the entire course of the operation.

0·1443 gram. of orpiment, decomposed according to the directions, gave 0·1761 gram. of magnesium pyroarseniate = 59·08 per cent. arsenic.

0·1044 gram. of orpiment yielded 0·12805 gram. magnesium pyroarseniate = 59·38 per cent. arsenic.

0·2233 gram. of the same ore, dissolved in nitric acid, and weighed as magnesium pyroarseniate in a platinum crucible, yielded 0·2755 gram. of magnesium pyroarseniate = 59·72 per cent. arsenic.

Proustite (Ag_3AsS_3).—But a very small quantity of the mineral was available for analysis, and even that was intimately mixed with argentite. No attempt was therefore made to extract the former mineral by hand-picking, but the entire mixture was placed in an agate mortar and ground, the grindings then being passed through a sieve. This removed all the proustite with some of the argentite, the greater portion of the latter remaining behind as flattened plates. Sufficient argentite, however, remained with the proustite to reduce in a considerable measure the percentage of the arsenic, and the deviation of the results from the theoretical percentage is attributable to this cause. Sufficient material was not at hand to make a check analysis, by dissolving the mineral in nitric acid and determining in the usual way, but as the residues were most carefully examined for arsenic, and as none was found to be present, the natural conclusion arrived at was, that the decomposition was complete. No loss of arsenic was noticeable during the entire operation, and the closeness of the results indicates that the decomposition of this mineral by the electric current can be accomplished as successfully as any one of those previously described. The conditions for oxidation were as follows: A current of one ampère running for thirty minutes, the current being reversed during the last five minutes. The amount of caustic potash used was 25—30 grams. Below will be found the results obtained:—

1·1589 gram. of proustite, weighed as magnesium pyroarseniate in a porcelain Gooch crucible, gave 0·0147 gram. of magnesium pyroarseniate = 4·48 per cent. arsenic.

0·2255 gram. of proustite yielded 0·0249 gram. of magnesium pyroarseniate = 5·34 per cent. arsenic.

Besides these minerals already recorded, several others were subjected to oxidation by the current, but owing to lack of material for the continuance of the work, satisfactory conclusions were not reached. The results are, however, of interest, and are, therefore, here appended.

Domeykite in Niccolite, $n(Ni.As.) + m(Cu_3As.)$.—The mineral used for oxidation came from Michipicoten Island, and was a small section of a specimen in the mineral collection of the University of Pennsylvania, labelled whitneyite. Two oxidations of the mineral, in which the residues still showed arsenic, gave, to the surprise of the author, 35·3 per cent. and 40·04 per cent. of arsenic, respectively, showing that the mineral could not be whitneyite, since this should contain theoreticaliy 11·64 per cent. of arsenic. A later oxidation gave, using 0·2·07 gram. of the mineral, 0·2016 gram. of magnesium pyroarseniate = 44·22 per cent. arsenic. 25—30 grams. of caustic potash were employed, with a current of one to one and a half ampères, for thirty minutes, reversing the current at the end for five minutes. In this oxidation no trace of arsenic was found in the residue. On reporting the results obtained to Dr. Köenig, he made an analysis of another sample, by dissolving the mineral in nitric acid, and found it to contain 47 per cent. of arsenic. This result is, however, not inharmonious with the last one obtained by the current, since, in a fresh fracture of the mineral, the niccolite and domeykite can be seen lying alongside of each other. Owing to this non-homogeneity, the sample analysed by Dr. Köenig may have contained more niccolite than the one used for oxidation by the current, and gave proportionately a higher percentage of arsenic. Unfortunately, the scarcity of the mineral neces-

sitated the discontinuance of the work, and the question of complete oxidation is still in doubt. The few per cent. difference in the results obtained by the two methods, however, indicates that the decomposition can be successfully accomplished under the conditions mentioned above.

ENARGITE ($3Cu_2S.As_2O_5$).—The material used for decomposition contained an admixture of gangue, and as with the domeykite, not sufficient of the substance was obtainable to settle thoroughly the question of oxidation. As the percentage of arsenic found, however, is within the neighbourhood of what the mineral ought to contain, and as no arsenic was detectable in the residue from the fusion, the result obtained is here appended, without any definite statement regarding the thoroughness of the method. The amount of caustic potash used in the oxidation was 25—30 grams., the current strength one ampère, with a reversal of the current at the end of the operation for five minutes. The arsenic was determined by weighing as magnesium pyroarseniate on a porcelain Gooch crucible.

0·2840 gram. of enargite gave 0·0770 gram. of magnesium pyroarseniate = 13·12 per cent arsenic.

The theoretical percentage of arsenic in the mineral is 19·1 per cent. If we remember, however, that the sample used contained gangue material, and that no arsenic was found in the residue, it is but fair to assume that the result lies within the limits of error, and that the oxidation is complete. No positive statement, however, can be made.

A study of the methods used for the determination of the arsenic in the various oxidations will be of interest. As has already been stated, the determination of the arsenic as arsenious sulphide, by weighing on a porcelain Gooch crucible cannot be recommended, owing to the great difficulty experienced in removing the sulphur with which the precipitate of arsenious sulphide is contaminated. The more common method of weighing the arsenic as magnesium pyroarseniate was found to be accurate, if the conditions laid down for this determination are complied with, the method requiring at the same time great care. In the incineration of the filter from the magnesium ammonium arseniate, constant vigilance was required to prevent a volatilization of a portion of the arsenic, even though the filter had been previously saturated with a concentrated ammonium nitrate solution. And in many cases it was necessary to moisten the burnt filter several times with the solution before it could be completely reduced to ash. Weighing the precipitate on either a platinum or porcelain Gooch crucible removes these sources of error, and is, of all the methods so far mentioned, the most to be recommended. In the precipitations with magnesia solutions, it was noticed that the presence of large quantities of alkaline salts have a tendency to materially retard the precipitation of the magnesium ammonium arseniate, and it became necessary to allow the solution to stand at least forty-eight hours before the precipitation was complete. For this reason, where large quantities of alkaline salts are known to be present, for example, the caustic potash used in the fusion, it may be more advisable to reduce the arsenic with sulphurous acid, precipitate it as arsenious sulphide, filter and wash, and then reconvert it into arsenic acid and determine as magnesium pyroarseniate.

Owing to the time and care required in the above determinations, the method described in *Sutton's Volumetric Analysis*, sixth edition, as recommended by Pearce, of the Colorado Smelting Company, was tried. The substance of the method is as follows:—"The arsenic brought into the form of alkaline arseniate is acidified with nitric acid, and boiled to remove carbon dioxide and nitrous fumes. It is then cooled to the ordinary temperature, and almost exactly neutralised as follows: Place a small piece of litmus paper in the liquid; it should show an acid reaction; now gradually add strong ammonia until the litmus turns blue, avoiding a great excess. Again make slightly acid with a drop or two of strong nitric acid, and by means of very dilute ammonia and nitric acid, added drop by drop, bring the solution to such a condition that the litmus paper, after having previously been reddened, will, in the course of half a minute, begin to show signs of alkalinity. The litmus paper may now be removed and washed, and the solution, if tolerably clear, is ready for the addition of silver nitrate. If the neutralisation has caused much of a precipitate (alumina, etc.), it is best to filter it off at once, to render the subsequent filtration and washing of the arseniate of silver easier, —." The latter portion of the process consists in determining the silver in the silver arseniate, and calculating the percentage of arsenic from the amount of silver found.

A number of determinations were made by the author to ascertain the value of the method, but all of the attempts made resulted in failure. It was found well nigh impossible to tell by the colour of the litmus paper whether the solution was acid or alkaline. In several cases, methyl orange was used as an indicator, and while the solution was made slightly alkaline, as recommended by Pearce, the addition of ammonia to the filtrates invariably brought down considerable quantities of silver arseniate, and the results obtained were proverbially low. The silver was not determined by titration, as recommended by Pearce, but by electrolysis. The best result obtained by this method, with the details of the operation, are given below:

A sample of rammelsbergite was decomposed under the conditions mentioned for that mineral. The fusion was decomposed with hot water, the insoluble material filtered off, and the clear filtrate acidified with nitric acid and boiled to remove the carbon dioxide. On cooling, ammonium hydroxide was added, the precipitated alumina, etc., filtered off, and the additions of dilute nitric acid and dilute ammonia made according to Pearce's directions, until the solution became faintly yellow, methyl orange having been used as an indicator. Silver nitrate was now added, the solution stirred, and the precipitate of silver arseniate filtered off. The addition of a drop of ammonium hydrate to the clear filtrate gave a further precipitation, and ammonia was, therefore, added until the precipitation was supposed to be complete. The two precipitates were then united, washed with cold water, dissolved in nitric acid and the excess of acid evaporated. To the solution, ammonium hydrate was added until the solution became alkaline, and then an excess of potassium cyanide, the solution electrolysed and the resultant silver weighed. 64·21 per cent. of arsenic was found, the same sample giving, by the pyroarseniate method, 70·34 per cent. arsenic.

The author believes that with continued practice, sufficient dexterity might be obtained with the method to obtain accurate results, but it is hardly one that could be recommended for work outside of a technical laboratory, where absolute accuracy is not so essential a feature, as that the results should be correct, relatively, to each other.

A comparison of the oxidation of the metallic sulphides with that of the metallic arsenides shows several points of difference. In the oxidation of the sulphides, it was observed by Dr. Smith that the process took place in three stages, the sulphur being first oxidized to hydrogen sulphide, then to sulphurous acid and eventually to sulphuric acid. A similar state of affairs was not observed with the arsenides, and the oxidation evidently proceeds directly from metallic arsenide to arsenic acid. Even in samples where the oxidation had not been complete, and where the residues still showed undecomposed material, the filtrates from the fusion showed no trace of arsenious acid after the alkaline arseniate had been removed by precipitation with magnesia solution.

In conclusion, the author would here express his sense of deep obligation to Dr. Edgar F. Smith, for his unremitting kindness during the progress of the above work, and for his constant help in assisting its completion.

Thanks are also due to Dr. George A. Köenig for samples of minerals, and to Mr. D. L. Wallace, for assistance rendered in the oxidations. —*Jour. Franklin Inst.*

THE JOINT RIVERS COMMITTEE.

A MEETING of this Committee was held on Monday afternoon in the Magistrates' Boardroom, at the Assize Courts, Strangeways, Mr. Alderman J. THOMPSON presiding.

Some discussion took place at the outset of the proceedings with reference to the amendments made at the last meeting in the Rivers Mersey and Irwell Prevention of Pollution Bill. Those amendments had been laid before Mr. Fitzgerald, an experienced Parliamentary draftsman, and he had strongly recommended that some of the suggested amendments should not be made, as the Bill was a very stringent one as it stood, and if made more stringent was likely to provoke such strong opposition as would ensure its defeat. Eventually the Bill was referred to the Parliamentary Sub-committee, who were instructed to draw up such amendments as they thought fit with a view to their being introduced when the Bill was before a committee of the House of Commons.

A letter was read from the solicitors to the West Riding County Council asking the Committee to join in a series of experiments in order to ascertain the best method of preventing the pollution of rivers. The Clerk was instructed to inform the West Riding County Council of the steps the Joint Rivers Committee had decided to take in the way of prosecuting a bill in Parliament, and also that they had come to the conclusion that it was inadvisable to fix any standard of pollution.

The CHIEF INSPECTOR (Mr. R. A. Tatton) presented a report, in the course of which he stated that in accordance with the instructions he received at the last meeting he had prepared a report on the state of the river Goyt above Strines. The principal towns on that part of the river and its tributaries were Hayfield, New Mills, Chapel-en-le-Frith, Whaley Bridge, and Disley, and the whole of the sewage from those places flowed into the river. This was quite enough to account for the water being very foul in summer when it reached Strines, as the distance through which it had to flow after receiving the pollutions was insufficient to allow of much dedorisation. Besides the sewage there was a large amount of pollution from paper works, bleach works, and print works. Cinder tips were also very frequent, and all the house refuse seemed to be thrown into the river. He suggested that this

should be dealt with through the local authorities of Hayfield and Chapel-en-le-Frith, as tipping into the river was so universal that constant inspection would be necessary, and the authorities should be made to realise their responsibilities in the matter.

The CHAIRMAN suggested that the attention of the local authorities should be called to the matter in the usual way, and that a copy of Mr. Tatton's report should be sent to each of them.

Mr. Alderman FORREST urged that proceedings should at once be taken against those who were responsible for the present condition of things. He thought this was one of the worst cases they would have brought before them, and he therefore moved that the Clerk should be instructed to write to the authorities of the various districts stating that unless a remedy was applied immediately action would be taken.

The CHAIRMAN said they had had a lengthy experience of this sort of thing in Manchester, and the plan they had adopted had been to draw the attention of the local authorities to the matter complained of first, and it had been very seldom indeed that no notice had been taken of their communication. There was a little fencing by some out-districts when they were likely to come within the city; but, speaking broadly, their complaints were generally received with consideration and acted upon. If they sent a courteous note first, and no notice was taken of it, it strengthened their hands very much when they had to strike; but to strike without sending notice would only have the effect of making them unpopular.

Mr. W. G. GROVES seconded Mr. Forrest's proposal.

Mr. HASLAM thought that the offending authorities ought to be given the usual two months' notice, and if nothing was done the Committee should then proceed.

The resolution was carried, and the meeting shortly afterwards adjourned.

MINERALS AND COLOURS IN 1891.

(FROM G. G. BLACKWELL'S ANNUAL REPORT.)

MINERALS.—The prediction made in my annual report twelve months ago that prices would continue firm, if not advance, has been more than fulfilled. We begin the year with every prospect, not only of maintaining the present figures, but having a further advance, certainly for many months to come.

MANGANESE.—Our imports into the United Kingdom have fallen somewhat below the average, large quantities, contrary to previous years, having been shipped to the United States. This is likely to continue, if not to increase. Therefore, the advance in prices during the last few months may not only be expected to exist, but higher prices will certainly rule. Further large sales have been made to the Continent and the United States, which will be a very heavy draw upon resources; in fact a great difficulty does at present, and will for the future exist, in fulfilling forward contracts, notwithstanding that stocks at the present time are larger than they were this time last year. There is nothing like enough to supply the present consumption, as new articles cannot be here in time to replace them. During the present year we look forward to a very much larger business and very much better prices than have ruled during the past few years.

FRENCH CHALK.—Our imports have very much exceeded previous years. There has been a continually increasing new consumption for it, and prices during the past year have not only been well maintained, but we close the year with higher figures than we commenced it with. Certain mines having given out, the production from these quarters has necessarily diminished, and with a certainty of a further increased consumption not only in the United Kingdom but for the Continent and America, we shall see a very much larger demand this year, and doubtless higher figures.

BAUXITE.—Its adoption to various new purposes is daily increasing its consumption, the demand, therefore, at the present time for it supersedes anything previously experienced. During the present year this will not only be maintained, but it is anticipated that there will be a still larger demand, and consequently higher prices.

EMERY STONE.—During last year the imports were quite up to, if not superseding, the average, and prices have been well maintained. In view of an anticipated scarcity of best stone during the present year higher figures will probably be experienced.

BARATES.—Carbonate of good quality was in good demand during the whole of the year, and prices have ruled pretty high. During the present year there is every probability of increased scarcity and higher prices. Sulphate has been rather scarce, especially for the high-class qualities, which have brought full prices, whilst the common qualities have had a difficulty to keep in pace with foreign competition. There is certainly a scarcity of finest white quality, which will enhance prices.

CHROME ORE.—The imports have been well up to the mark of the last few years. High-class ore has been in good demand, and has brought full figures, which are likely to continue during the present year. Spot stocks of good ore are practically nil.

BOG ORE.—As to quality supplies have been very good, and sales have been steady without fluctuation in prices. This year bids fair for a good business and at fair prices.

MAGNESITE has again ruled flat during the last year. The large stocks are very little reduced, and arrivals have been very few on that account, the trade having very considerably fallen off.

COLOURS.—There has been a plentiful supply of raw material during the whole of the year. The demand, however, has been quite equal to it. Prices have been well upheld without any special fluctuations. Plumbago has found many new uses. Prices have been very much better during the past year, and increased quantities have been consumed. We therefore look for higher prices during the coming twelve months.

Reports of Companies.

ELMORE'S PATENT COPPER DEPOSITING CO., LTD.

The annual general meeting of the shareholders of Elmore's Patent Copper Depositing Company (Limited) was held recently at the City Terminus Hotel. Mr. J. J. Atkinson presided, and, in proposing the adoption of the report, stated that their difficulty now was not to get orders, but to know what orders to refuse out of the great number offered to them. There was a French Elmore Company, which had been formed to work the process in France, and last week he was invited to see that company's works. They were now in operation, and, although designed for an output of 90 tons a week, their manager already reported that he could sell double their proposed output. He had no dividend to declare on that occasion, but they were actually earning a considerable one, and he himself expected that before very long they would be able to forward the shareholders a dividend. As to their land purchase, Mr. William Elmore bought the estate for them, and later on, when the land had increased in value and they saw the bargain which Mr. Elmore had made, they accepted his offer to let the company acquire the property at the original price. He (the chairman) had every confidence in the value of their invention, and he held over 8,000 shares in the company, the directors holding, he believed nearly one-third of the issued capital. He afterwards read a long letter which had been addressed to the directors by Mr. William Elmore, who desired to confirm his report of the 30th ult. and the gratifying results which he was then able to foreshadow, their experience since having, he said, more than borne out his figures. Since the 20-ton plant was started they had received specifications and sent out quotations in reply to inquiries for over 700 tons of copper tubes for various purposes, besides a large amount of copper to be deposited upon rams and other expensive articles. Another stage in the realisation of his promises had been reached—namely, the satisfactory production of a copper cartridge case, which meant the successful application of the Elmore process to pans for brewers and distillers and other articles not of tubular form, but having a bottom. In conclusion, Mr. Elmore said he believed they would find in the future, as in the past, that every statement he had made as to the various applications of the process would be fully borne out. General Fife (a shareholder) seconded the motion. In reply to questions, Mr. Elmore stated that the accounts were made up to June 30, at which time they were making very little copper from their tanks. There was therefore no profit, or very little profit, shown in the statement of accounts. Their profits had all been made since. At the commencement of their operations they had a very defective engine, which was made by one of the best engineering firms in the world, but which was constantly breaking down. This was the cause of the laminated tubes being issued, and the circumstance had occasioned them considerable trouble, but this was a feature of the past, and such a thing never happened now. They had been exceedingly anxious not to send out any tube for steam purposes lately—until, in fact, they were quite certain of their ground. The fact of their having made a laminated tube had caused them to take out certain patents for the manufacture of sheet copper. The motion was adopted.

THE YORKSHIRE WATER GAS COMPANY, LIMITED.

The ordinary general meeting of the Yorkshire Water Gas Company, Limited, was held at Leeds last week, Mr. Joseph Mitchell presiding. The Chairman, in moving the adoption of the report, said they had obtained the rights to supply Lancashire with water gas, and they had the evidence of Sir Henry Roscoe as to its capabilities. They had practical demonstrations at Leeds Forge, at Harrogate, and at Lancaster. Mr. Brook, a shareholder, in proposing that the report be not adopted, said that if water gas had anything in it it should be about time it showed some of it. In 1889 they were going to have the gas displayed in London. What occurred? They had a show at Windsor and an explosion occurred. (Mr. Samson Fox: "No, no.") At Hull there was an explosion, then two men were killed at Leeds

Forge, and there had been many an explosion at those works. After a rather angry altercation between Mr. Brook and the chairman, and Mr. Samson Fox, two or three shareholders spoke in favour of the directors, and Mr. Samson Fox contended that they had nothing to complain of. Water gas was getting on, but it had its difficulties. He had had it in use in his own house for a long time now and there had not been a hitch. He asked the shareholders to withdraw from the attitude of opposition to the directorate. They had not lost much; last year the loss was only £3,000, and this year it was only half that. The report was adopted, there being only three or four dissentients.

MACIVOR'S PATENTS, LIMITED.

The second general meeting of the shareholders in MacIvor's Patents, Limited, was held last week at the offices, Worcester-house, Walbrook. Mr. J. J. Atkinson, who presided, stated that the machinery had now arrived, after some delay owing to the bad weather, and the company would be manufacturing white lead in accordance with Mr. MacIvor's process in the course of a few days. He concluded by moving the adoption of the report and accounts. Mr. J. T. Cooper seconded the motion, which was carried. The chairman then moved that, for trade purposes, the name of the company should be altered, so as to comprise the nature of its business and its address, to "The Northfleet White Lead Company." Mr. A. Cruickshank pointed out that this alteration did not convey any idea of the process with which the name of Mr. MacIvor had been indissolubly identified, and moved as an amendment that the company should be styled "MacIvor's White Lead Company Limited." Mr. John Allan seconded the amendment, which was agreed to.

BISMUTH SALICYLATE.

IN order to prepare bismuth salicylate by the double decomposition of a bismuth salt and an alkaline salicylate, it is necessary to dissolve the former in acid, with the result that a mixture of the salicylate with salicylic acid is obtained. In order to avoid this the author prepares the salt in the presence of ammonium chloride, which has the power of keeping the bismuth salt in solution without any fear of dissociation and precipitation of a basic salt taking place. 100 grms. of sub-nitrate of bismuth are dissolved in hydrochloric acid (concentrated) and the solution treated in the cold with 1 litre of a saturated solution of ammonium chloride; to this is then added a mixture of 12 grms. of sodium salicylate and 500 grms. of a saturated solution of ammonium chloride. On standing, the bismuth salicylate separates out in the form of a voluminous crystalline powder, closely resembling dehydrated quinine sulphate in appearance. It is filtered off, washed, and dried at the ordinary temperature. Analysis points to the formula $Bi(C_7H_5O_3)_3 + 4\,H_2O$; it is insoluble in and unacted upon by cold water, whilst boiling water, acids, and alkalies decompose it with the separation of salicylic acid or of a salicylate. It is also readily decomposed by absolute alcohol, and on heating when the decomposition begins at 50° C.

LEAD POISONING.

AN inquest was held last week by Mr. S. Smelt touching the death of Ellen Martin, 17, who had lived in Thorn-street, Sanderson-street, Queen's-road, and whose death was attributed to lead poisoning. The deceased, like the girl Longworth, upon whom an inquest was held on last Tuesday week, was in the employ of Messrs. Kerr and Hoegger, dyers, Turkey-lane, Rochdale-road. Prior to the opening of the enquiry, Mr Smelt remarked upon the recklessness displayed by the girls employed at Messrs. Kerr and Hoegger's in not wearing the respirators provided, which they termed "muzzles." The evidence in the main was similar to that adduced at the first inquest.—The father of the deceased (who works at the same place) stated that he had had at times great difficulty to get his daughter, who was a noddler and had to handle material largely composed of poisonous lead colours, to wash her hands after coming home from work, and he had often seen her sit down at table with unwashed hands. He had also had trouble in getting her to take the medicine usually given to persons employed in the particular work she was engaged in. Both the orange and the yellow colours, which were often handled by the girls, were dangerous to health.—Mr. Johnson, assistant factory inspector, asked the witness whether there was not medicine or some such drink as "sulphuric acid lemonade" kept on the premises for the workpeople, and was answered in the negative. The inspector pointed out that all white lead factories provided that drink, which was an excellent protection against the ill-effects of poisonous colours.—Sarah Ann Bolden, another girl in the same employment, said that as a protection against the poison "muzzles" were provided, but the girls did not like to wear them, and they instead generally held a pocket handkerchief over their mouths. She had seen the deceased eat her meals with the orange dye on her hands.—William Jacques, a foreman, also said that he had repeatedly told the girls to wear the respirators, and also to wash their hands, but they would do neither. He had often seen them taking their food without having washed their hands. After the previous inquest he again warned them of the serious risks they ran, but even then they would not wear the respirators. Since the death of Martin, however, the girls generally seemed more afraid of the consequences.—Dr Armstrong, who was examined at the request of the senior partner of the firm, said about three years ago some girls at these works—which were then carried on by another party—were suffering from the effects of lead poisoning, and he advised the introduction of respirators. At that time sulphuric acid lemonade was provided. In his opinion the girls were utterly reckless, and would not adopt the precautionary methods used by the firm. If a girl nearly died from poisoning, in a month's time she did precisely the same thing again.—The Deputy Coroner said the jury would agree with him in saying that no blame whatever attached to the firm.—A verdict of death from accidental poisoning was then returned.

FLEXIBLE METALLIC TUBES.

THE following is a brief account of the ingenious way in which the new flexible metallic tubes are produced:—The tubes are produced by a machine from strips of metal of the required length, width, and thickness. These strips, in passing through the machine, are corrugated longitudinally with a large and a small corrugation side by side. The tube is formed by the corrugated strip being coiled spirally round a mandrel in such a way that the small corrugation enters and interlocks with the large one, and forms what is known as a piston joint. Formerly, this kind of flexible tubing was made steam and water tight by means of a strip of india-rubber inserted in the interlocking corrugations. This tubing answered well for many purposes, but, in some cases, the substances passed through caused the india-rubber to deteriorate. The new form offers a long-sought solution of the problem of the manufacture of flexible metallic tubing unaffected by the passage of any ordinary liquids or gases. This tubing is being manufactured by the Flexible Metallic Tubing Company at their works 48, Parker-street, Holborn, London, where several tests have been carried out with tubes of different diameters. In one case a 35 ft. length of 1 in. internal diameter tube was tested under steam at 50 lb. pressure per square inch. The same tube was afterwards tested under hydraulic pressure at 800 lb per square inch. Another piece of tubing half an inch in internal diameter was tested up to a little over one ton per square inch, when it burst. The tubes are at present manufactured from 5-16 in. to 3 in. internal diameter, but machinery is being put up for turning out tubes up to 12 in. diameter, and capable of standing higher pressures than at present. The company have also a very good coupling for their tubing. Besides being tight at high pressures, this tubing is also tight at low pressurees, and is being used as ordinary gas tubing. These extreme qualities, together with its flexibility, give it a very wide range of application.

A JAPANESE SULPHUR MINE.

A WRITER in the *Japan Mail*, of Yokohama, describes a visit to a sulphur mine in the northern part of the main island. The works are situated on a platform made in a gorge partly by hand and partly by a landslip, and from the back a road goes up to the *solfataras*. On each side are high hills well wooded, save where landslips have occurred. They possess a bath, deliciously warm, containing sulphur in suspension and iron and alum in solution. The sulphur is melted by super-heated steam. About a mile up the gorge are the springs which supply the baths at the works, and also a bathing establishment in another valley some miles away, and another spring is used by the miners to cook their rice. All are boiling when they issue, but unless enclosed in covered pipes they cool rapidly and deposit fine "flowers of sulphur," which is collected and sold for local consumption. Leaving the springs, the sulphur region proper is entered, which is almost at the top of the gorge, or head of the valley. Before coming into the hands of the present proprietors, the *solfatara* was worked on Government account, and one of the old workings is very curious. It is a small gallery with a hot ceiling, and exudes very beautiful needle-shaped crystals of pure sulphur, boiling hot, and transparent when first gathered, but they soon become opaque and change into small octahedral crystals that will not bear much pressure, but crumble to the touch—showing that the sulphur has been deposited at fusing heat. Arriving at the head of the stream the ascent of the crater begins. There is a toboggan slide of 720 ft. from the crest of the crater down the steep cone to the upper workings. The ascent is neither safe nor easy. A miner went in front with a pick to cut steps, and the clouds were entered about half-way up. At the bottom of the crater are very rich mound of sulphur ore in inexhaustible quantities. The workings give off fumes

and gas, and great care is needed by the workmen. The place seemed much like that described in one of Sinbad's voyages—no life, no vegetation, no water, only mud and sulphur. It is on record that 315 years ago the crater exploded like Bandaisan and did great damage. The path down the gap then made in the crater is a difficult one, overhanging rocks threatening at every step, the path entirely obliterated, and the chasms left by the torrent being both steep and dangerous. Above the neighbouring town of Numajiri there is a sulphur factory on the old Japanese principle of smelting in an open boiler and refining in a close cylinder furnace. It was not at work, but must be a most wasteful method, and hurtful from the fumes given off. The deposits are enormous, and must amount to millions of tons. The proprietors profess to turn out on article equal to the "roll" sulphur of commerce. In the sulphur regions there is no sign of life, vegetable or animal, but the cone and descent are well wooded, and rare plants and flowers flourish in profusion. These, however, become stunted as one descends into the crater, and on the mud plain there is not a vestige of verdure. There are, of course, no fish in the rivers.

PRODUCING CYANOGEN FROM GAS.

By W. Leybold.

(*Continued from page 5.*)

Mechanism of Purification.—For these experiments a spongy iron containing 33·7% of iron and about 1% of carbonate of calcium was employed.

If a current of hydrogen mixed with hydrocyanic acid be passed over this material, *no hing is absorbed.*

If, however, the same material be saturated with sulphuretted hydrogen, so as to form ferrous sulphide, hydrocyanic acid passing at an average rate is largely retained, even if the mass be previously regenerated by a current of air.

Cyanide of iron is first formed, and is then transformed by the air into Prussian blue, or ferrocyanide or iron. This blue, however, has not a constant composition, since there are several ferrocyanides of iron, some of which are also combined with ammonia. The existence of these various ferrocyanides can be proved by first testing the amounts of ferrocyanide and sulphocyanide, and then repeating these tests after boiling the alkaline solution for four hours; a portion of the ferrocyanide is thus converted into sulphide and sulphocyanide of iron. In the dry material, different numbers are usually obtained in the two cases

Calculating the amount to hydrocyanic acid for example:—

I.—Testing.

12·69 of blue per cent. corresponding to	7·17	HCN%.
2·6 ,, sulphocyanide of ammonium ,,	0·924	,,
Total	8·094	,,

II.—After Boiling.

6·42 of blue	3·628	,,
14·83 ,, ...	5·268	,,
Total	8·896	,,

This shows that the alkaline solution should not be boiled in making the analysis, because this diminishes its richness in Prussian blue, which is the only commercially valuable constituent.

A small amount of sodium carbonyl-ferrocyanide is frequently found, the violet tint of which prevents the exact determination of the point of saturation in Knublanch's method.

It has just been shown that the action of hydrocyanic acid on a purifying material saturated with sulphuretted hydrogen gives Prussian blue; a secondary reaction also produces traces of sulphocyanide. The amount of sulphocyanide, however, increases remarkably when the gas contains ammonia or ammonium sulphocyanide.

The following table contains analysis of the material saturated with sulphuretted hydrogen, which has been exposed to the action of a mixture of hydrocyanic acid and ammonia, and of hydrocyanic acid and ammonium sulphide respectively:—

	$HCN+NH_3$	$HCN+(NH_4)_2S$.
Water	26·6%	33·02%
Sulphur.....	24·98	11·39
Prussian blue	1·7	5·38
Ammonium sulphocyanide	3·03	4·40
Ammonia	2·05	0·75

With a mixture of hydrocyanic acid and ammonium sulphide, the amount of ferrocyanide is scarcely greater than that of sulphocyanide. In the case of ammonia and hydrocyanic acid more sulphocyanide than Prussian blue is formed.

A purifying substance which would contain a certain amount of fixed alkali would also give rise to a large proportion of sulphocyanide. The best result will be obtained by keeping the purifying material perfectly neutral. It appears then that to increase the yield of Prussian blue it is necessary to have a purifying material free from alkaline reaction, and to remove the ammonia as completely as possible from the gas.

In some works new arrangements of scrubbers have led to improved results, the condensing water containing a third more ammonia and the amount of Prussian blue being nearly doubled. The monetary value of this modification amounted to not less than 140 francs per load of purifying material.

This is, nevertheless, not a complete solution of the problem. Experiments show that at the most 83% of the cyanogen arriving at the purifiers is retained, 17 being absolutely lost. Mr. Willm formerly proposed (Bull. Soc. Chem., 41, 449) to convert crude trimethylamine into cyanides by passing the heated gas into milk of lime or an alkaline solution; to then obtain ferrocyanide, it was only necessary to add the proper amount of ferrous sulphate to the alkaline solution. A similar process has been patented by Knublanch. The gas is passed into a tower supplied with a mixture of the proper amounts of caustic soda and ferrous sulphate; the ferrous oxide is gradually dissolved and sodium ferrocyanide formed. Theoretically, this apparatus should be placed as near as possible to the retorts, so as to collect all the cyanogen; the tar, however, would soon hinder the solution of the ferrous oxide, and, still more important, the large amount of ammonia present would cause the production of considerable quantities of valueless sulphocyanide. It would therefore be more practically convenient to place this apparatus between the scrubber and the purifiers. Almost all the cyanogen would thus be collected in a more convenient form than in the purifiers.—*Journal de l'Eclairage au Gaz.*

THE CARBONIZATION OF WOOL.

THE successful extracting of cotton from union cloths without injury to the reclaimed wool, has led to the extension of the process to raw wool for the purpose of ridding it of burrs and other particles of vegetable matter. These burrs are very difficult to remove, and often leave a large amount of waste during the process of extraction, whilst, if allowed to remain, they would do incalculable mischief to the yarn. There are two methods of dealing with them in general use—one is, to pass the wool through a burring machine, which beats the burrs from the wool; and the other is, to destroy the burrs by carbonization. The former method is most suitable when the wool contains large burrs, but carbonization is more economical for wool containing small burrs, straw, chaff, and other small particles of matter. One drawback in using the burring machine is that many of the smaller burrs adhere to the wool after being passed through the machine, and carbonization is afterwards resorted to, in order to reclaim the wool attached to them. For this and other reasons the chemical process is likely to totally supplant the burring machine in course of time. The process generally adopted is similar to the one followed in making extract wool. The burry wool is firstly saturated with a dilute solution of sulphuric acid, whizzed in a hydro-extractor, and afterwards opened out and spread in a heated room. Here chemical action is quietly at work, the burrs are deprived of their hydrogen, and crumble to carbon, whilst the wool is liberated and washed. Another method which finds favour is to saturate the wool with a solution of chloride of aluminium (Al_2Cl_6). After being whizzed and dried, it is taken to a room heated to about 200° F., where it remains for a little less than an hour. Washing in fullers' earth and water follows, by which the chloride is removed, and the residue of carbonized matter washed away. The prejudice which formerly existed against these methods of extracting burrs is rapidly disappearing, as experience has proved that if the wool be properly clean previous to carbonization, and the acid the required strength, no injury to the fibre is caused, neither is the felting of the wool in any way destroyed.

SALFORD GAS.

The illuminating power is expressed in standard candles; the ammonia and total sulphur in grains per 100 cubic feet. The carbonic acid is calculated to volumes per cent. The determinations have all been made on the gas supply to the Manchester Technical Laboratory, 32, Blackfriars-street.

Date. 1891.	Illuminating power.	Ammonia.	Total sulphur.	Carbonic acid.
Dec 31	13·7	0·05	15·03	1·01
1892.				
Jan. 4	14·6	*Nil.*	14·5	1·09
,, 5	15·1	0·01	20 66	1·42
,, 6	16·2	0 03	20·01	0·97

Correspondence.

**** We do not hold ourselves responsible for the opinions expressed by our correspondents.*

FORMIC ACID.

To the Editor of the Chemical Trade Journal.

SIR,—I should esteem it a favour if you would allow me a short space in your Journal for the insertion of this letter. I am desirous of becoming acquainted with the best and cheapest process for the manufacture of Formic Acid. Should any of your readers be able to communicate with me upon this subject, I should be very pleased to receive any information from them through you or your Journal —I am, etc,

LANDORE.

ANSWERS TO CORRESPONDENTS.

LANDORE.—You will see that your query has received our attention.

LEATHER (Bradford) —We are not aware of the name of the makers of the enamel in question, but we should advise you to communicate with the Cannon Holloware Company, Bilston, Staffs., who make a good acid-resisting enamel.

R. M. G. C (Dublin).—Thanks for your letter. We shall be pleased to hear again from you.

F. H. G.—We have the matter under consideration, the result of which you will see in due course.

W. T.—Boracic or salicylic acids are both used.

R.C. L.—You will find the information in our market reports.

Selected Correspondence.

THE SCIENTIFIC TEACHING OF ENGINEERING.

To the Editor of the Times.

Sir,—As a Cambridge man I rejoice in reading the earnest advocacy in your leader of to-day (December 25) of the claims of the scientific teaching of engineering at Cambridge. At the time when I had the honour of acting as Demonstrator of Engineering under Professor James Stuart, to whose zeal and energy Cambridge owes much in this matter of the conception of an engineering school, the full development of those ideas was a strongly nourished hope. Whilst, however, your powerful pen supports the necessity for the establishment of a thoroughly well equipped engineering laboratory at Cambridge, I would venture to express the desire that your arguments may be extended to include the wants of London as well as Cambridge, particularly of the college, viz., University College, in which, under Professor Kennedy, the scientific teaching of engineering was begun on lines which have served as models for many other institutions. As regards the possession of appliances and apparatus for teaching the practical sciences of mechanical and electrical engineering, University College, London, has been left far in the rear of many of the other sister University colleges of England. No scientific teaching worth the name can be given by any teacher of these subjects without the existence of instrumental means sufficient to enable the pupils to handle things and facts, and not merely to listen to notions and names. At the present time the means for such adequate teaching simply do not exist in this oldest of the University colleges. A committee of the council of University College, London, are now considering the question of erecting properly furnished laboratories for teaching mechanical and electrical engineering under conditions which will make it possible to give efficient instruction in these practical sciences. What they are able to do will depend entirely on the extent to which they can gain public support for this obviously necessary work. Amidst all the discussions on the formation of a true "Teaching University for London" it must be remembered that the accomplishment of much that is intended under this title rests upon making, in existing teaching institutions, proper provision in the way of laboratories and experimental sciences for so teaching the pure and applied sciences as shall render it possible to secure the best teachers and get the best results out of their teaching.

You, sir, make an appeal to the engineers of England to assist in the work of establishing an engineering laboratory at Cambridge, which will, in its results, be of national utility. May I, through your columns, add my much more restricted powers of request in the same direction by asking the old students of University College, and those to whom that college threw open its doors at a time when the older Universities were not quite so naturalised as at present, to come forward and assist the Council in the work of completing the £20,000 necessary to build and equip an engineering laboratory for the teaching of mechanical and electrical engineering, so properly provided that the professors and students of these subjects shall not be placed at a disadvantage as far as opportunities of study and research are concerned, not only when compared with the older and more famous Universities, but even with many of the eight or nine University Colleges of England and Wales, which are, by degrees, furnishing themselves with appliances for the effective and scientific teaching of engineering.—I am, sir, etc., J. A. FLEMING,

Professor of Electrical Engineering in University College, London.

SIR,—In your issue of Friday, 25th ult., which has just reached me, you have a most admirable leader upon the needs of engineering education at Cambridge University. In it you mention that "two engineering laboratories exist in London—one at University College, founded by Professor Kennedy, and another at the Central Institution of the City and Guilds of London Institute." Will you kindly allow me space to point out that at King's College, London, we are struggling with very similar difficulties to those experienced at Cambridge? The engineering school at King's College is, I believe, the oldest in the country, and there are at present more than a hundred matriculated students on the roll. It possesses workshops fairly well equipped, but of an engineering laboratory there is only the nucleus; and without such a laboratory some of the most important portions of an engineer's training cannot be efficiently taught. With so large a number of students there is the utmost difficulty in making even provisional arrangements Lady Siemens has generously given £6,000. to establish an electrical laboratory in memory of her husband, and £10,000. are now needed to establish a mechanical engineering laboratory. Towards this sum I am at present appealing for subscriptions to members of the engineering profession in London, and to all interested in engineering education.

The charter of the proposed Albert University recently passed by the Privy Council contains provisions for a science degree in engineering, and it is therefore of the highest importance that, as a constituent college of that proposed University, King's College should be equipped in a way to carry on its work with the highest possible efficiency.

May I ask, therefore, your kind insertion of this letter, so as to bring the needs of London before the public, in the hope that London may obtain a share of that munificence which has endowed the more northern colleges with engineering laboratories on so magnificent a scale?—I am yours obediently, DAVID S. CAPPER,

Professor of Mechanical Engineering, King's College, London.

SEWAGE TREATMENT.

To the Editor of the Manchester City News.

Sir,—Many of your readers who take an interest in the question of the purification of sewage will no doubt have read the report in your issue of December 24 of the two papers read at the meeting of the Manchester section of the Society of Chemical Industry.

In Mr. J. Barrow's paper "Clarine," which is really a fancy name for perchloride of iron, is introduced as if it were a substance which was entirely new. We think it might have been well if the reader of this paper had consulted the patent list before introducing perchloride of iron, because it is a well authenticated fact that this material was tried and discarded nearly fifty years ago. In February, 1847, Brown patented the use of the sulphates and chlorides of iron. In October of the same year Ellerman patented the use of the chlorides and acetates of iron. Again, Dales's fluid, which consisted of a strong solution of perchloride of iron, was proposed by Hoffmann, Frankland, and Miller for deodorising the Thames during the hot summers of 1857 and 1860. The proposal, however, was abandoned, both Odling and Letheby condemning the material on account of the black mud which it would form in the river undergoing putrefactive changes, thus rendering the stream more unsightly than the sewage itself This material was again tried in 1852 and 1860 at Croydon "The results were not satisfactory, because the suspended matter was imperfectly removed, the iron sulphide giving the effluent a black and polluted appearance." These facts abundantly prove that whatever results may be obtained in laboratory experiments "Clarine" or perchloride of iron, when tried practically on the large scale, has proved a complete failure.

The data quoted by Mr. H. Grimshaw from the report of the Salford experiments are valueless, first because it has been proved that the figures contained in that report were in many particulars altogether wrong; and the fact that the new Irwell Conservancy Committee have undertaken a series of experiments *de novo*, shows clearly that no weight is attached by them to the report. Moreover "Clarine" does not appear at all in the report, although your readers would conclude from the reference to it in the paper that it formed one of the materials tried. We are not aware indeed of any instance where perchloride of iron under this new name of "Clarine" has been employed in sewage treatment. We may just further remark that, at the meeting where these papers were read, it was pointed out during the discussion that

the samples of raw sewage treated were said to contain a much less percentage of albumenoid ammonia than was possible.

With regard to the figures given of the weight of sludge obtained by the various processes, these are in the main hypothetical, and, so far as the aluminoferric is concerned, they are wholly erroneous. In the light of these facts we certainly consider it at least premature on the part of the gentlemen named, to give publicity through your columns to papers which lack the important elements of novelty and utility.

Manchester Alum Works. PETER SPENCE AND SONS.

Agricultural Notes.

GAS LIME FOR WIRE-WORMS.

Amongst the many popular fallacies in farming, there is one to the effect that gas lime is a cure for that destructive pest wireworm. In order to test its efficacy, a farmer bought several tons of gas lime in which an opening was made deep down in the lime into which some wireworms were put. On opening out the lime several days afterwards they were found lively and uninjured. The principal use found for gas lime is to apply it to mossy grass lands. If applied neat it will take off both the moss and the grass, so that its strength should be regulated according as the land is affected with moss. The best way is to mix it with road scrapings, turn the heap, and apply in the autumn. It acts as a sweetener to the grass, and also helps to release fertility in the soil. Where land is affected with wireworm it is advisable not to totally kill off moles, as these little scavengers will render a good account of the pest. Accident sometimes teaches us what the most persevering research fails to show. Some years ago a farmer was carting out his liquid manure tank on to the grass land. He had to cross the corner of an arable field which for years had been badly affected with wireworm, when the tank sprang a leak and he distributed its contents over the corner. From that day to this the land at the place has never been troubled with wireworm. In another case a garden which had been cropped for very many years, and which had become so badly infested with wireworm that the farmer could not grow potatoes in it; he adopted the expedient of dropping a pinch of nitrate of soda beside each set in planting, and the crop was unharmed. Crows are sometimes blamed for the work of the insect pest, but examination will show which of the two is the culprit. Crows never attack young turnip plants unless the latter are suffering from wireworms. The latter feed on the delicate top root of the young plant, which they eat through, and the top falls to the ground. The crows are quick to discern these signs of the presence of the insects, and they begin to pull up each plant in their search for the wireworm. The crow does not eat the plant, and hence pulls it straight out of the soil, root as well; the wireworm eats through the roots and the plant falls—a very clear and easily observed distinction. As many farmers now possess liquid manure tanks, small experiments on arable lands affected with wireworm could easily be made, and with most probably satisfactory results.

CHEMICAL REPORT OF THE ROYAL AGRICULTURAL SOCIETY.

The Chemical Committee of the Royal Agricultural Society have issued their quarterly report with reference to the adulteration of feeding stuffs analysed by their chemist, Dr. Voelcker. In one instance linseed cake costing £9. 10s. a ton was found upon analysis to contain 5·85 per cent. of sand, the oil present being less than 10 per cent. The cake was declared to be impure, and the price very high, even supposing it to have been pure. The explanation of the makers was that the oil percentage was not guaranteed. The presence of sand was admitteed, and a return of 10s. per ton allowed on account of it. The suggestion that arises is that buyers should insist upon an analysis, when an excuse of the kind given in this case cannot be made. In another instance a sample was analysed for which £9. 6s. 3d. per ton cash delivered had been paid, the cake being guaranteed 95 per cent. pure. In this case the vendors were not the manufacturers, the cake being made for them by contract upon the same terms as those quoted. The cake was found to contain 1·15 per cent. of sand, and to be impure, containing a considerable quantity of rape and other foreign seeds. No steps were taken to ascertain whether the conditions of the guarantee were being fulfilled, or whether the cake sold as pure really was pure. Another sample was purchased for £9. 5s. This contained only 9·66 per cent. of oil, and was found to be impure, containing an admixture of weeds, seeds, and starchy impurities. In this case it was mentioned that linseed cake was ordered without reference to purity or analysis, and was described in the invoice as Riga cake. In two of the three instances quoted no specific requirement was made by the buyer, whereas in each case purity should have been demanded upon the invoice and a guaranteed analysis required.

SOCIETY OF CHEMICAL INDUSTRY.

SCOTTISH SECTION.

A meeting took place in Glasgow, January 5th, Mr. C. A F presiding in the absence of Mr. E. C C. Stanford, owing to illne Mr. E. Rodger, Glasgow, read a paper, entitled, "A Sketch o English Process of Antimony Smelting," in which the peculiar furn crucible oven in use was rather minutely described, along with the and upkeep of the crucibles themselves. The furnace is pierced the top by forty-two openings in two rows of twenty-one each, th which the crucibles are lowered into position, the three dozer a half making a full charge. As a rule there are four meltings fo crucible during the shift of twelve hours. The constituents o crucibles were closely detailed, and the course of the various and cessive fusions followed, up to the production of the metal itself highest condition of purity at present attainable. Sulphur is th impurity which in the later stages gives the most trouble, its presence being highly undesirable the utmost pains have taken to rid the finished ingot of as much as possible. The parative purity of the article when ready for the market is any case decided by analysis, but always by appearance surface of the fracture readily showing to the practised whether the smelting has been well or ill performed. Mr. Rodg not in a position to go into the financial aspects of the process, said that each of these furnaces required a staff of 36 men (l smaller helps), and got through about 22 tons of coal per week. reading was highly appreciated by those present. A conver followed, Dr. J. B. Readman, Edinburgh, making allusion destructive costs of these short-lived crucibles (half-a-crown apiece laying emphasis on the desirability of some other method of sm being adopted. The blast furnace system might perhaps eventua found practicable at greatly decreased costs, but he was not awar far experiment had been carried as regards that or any other s Replying, Mr. Rodger said that the crucible system at present he field undoubtedly, despite the high costs; the blast and one furnace had been tried, but not with any very encouraging s apparently. The life of the crucible varied according to circumst but the treatment of every ton of ore certainly used up a num them, perhaps to an average of eleven. A cordial vote of thanl passed. Mr. D. J. Playfair, Glasgow, then read some notes production of cyanides, descriptive of his own experiments after method, which have not yet, however, been fully carried out. Fawsitt referred to the importance of cyanide of potassium as a in gold extraction but for the costliness of it, and Dr. Readman if the late experiments in cyanide production by blast furnace ha continued or not. Mr. Playfair thought nothing useful had cc them. If successful in the researches he had just so far describe cost of cyanides would be cheapened by from 25 to 30 per cent. a vote of thanks the meeting closed.

THE USE OF THOMAS SLAG.

BY M. JOULIE.

THE following remarks upon the use of Thomas slag were m M. Joulie at the Agricultural Congress at Versailles.

The slags produced at works which do not work the acid Be plant according to the process of Messrs. Thomas and Gilchrist, little, if any, phosphoric acid, and ought, in consequence, to be r for manurial purposes.

Even when the genuine Thomas slag is obtained it is divide two classes, one containing excess of lime and the other not.

The former of the two, namely, that having excess of lime contains about 12% of phosphoric acid, but it disintegrates under the influence of moisture, on account of the excess lime it contains becoming hydrated, swelling through its combinatio the water, so that it completely assumes a finely divided state. there being no need to grind these slags, they are sold at a low and afford a cheap source of phosphoric acid. At the same since they are poor, they are not suitable for transport to a di but most advantageously employed in the neighbourhoods surro the works where they are produced.

The slags, which do not contain an excess of lime, are much and are found to contain from 14% to 20% of phosphoric acid; b do not disintegrate of their own accord, but have to be finely g thus increasing their price.

Both classes of slags contain phosphate of lime in combinatio

silicate of lime, etc. Reduced to a powder, either by natural or mechanical means, they are readily attached in the soil by carbonic acid, which dissolves the phosphate of lime, thus assisting a state of molecular division, so that they are very easily assimilated.

On this account they can be used in the place of superphosphates. This, however, is only true for soil rich in organic matter, such as recently cleared forest land, and garden soils, etc., because soils of this nature contain large quanities of carbonic acid, and, moreover, humic acid in abundance.

But in ordinary ploughed land their action is generally much slower than superphosphates, whilst, in calcareous earths, their action is even wholy inappreciable. These slags are, therefore, specially suited for non-calcareous and highly organic soils where they act rapidly, both their phosphoric acid and lime being utilised at once.

In soils which contain but little organic matter, so long as they are not calcareous, they may be employed, though they are inferior to superphosphates. It is thus apparent that for soils rich in lime, superphosphates are the only phosphatic manure that can be used with advantage.

In any case these slags ought to be ploughed in or spread, in the autumn, upon land which is lying fallow. They ought never to be mixed with superphosphates, which they deteriorate, neither with ammonium sulphate from which they liberate nitrogen as ammonia, nor should they be allowed to sweat for the same reason.

Trade Notes.

OBITUARY.—The death is announced, at the age of seventy, of the eminent chemist, Prof. Stas.

WHO BEARS THE LOSS?—There are nearly 50,000 wells in Pennsylvania, producing about 61.000 barrels of oil per day, and it is calculated that only about 2,000 of the whole number are now running at a profit, the present price of oil being only 4s. per barrel.

SERIOUS FIRE IN AMERICA.—A great fire broke out last week in the Standard Oil Cooperage Works, New Jersey. The firemen had little chance of coping with the burning inflammable mass, and the whole of the works, covering a vast area, were destroyed. The damage is estimated at £400,000.

IMPORTANT TO PETROLEUM MERCHANTS.—News comes from Batoum that the Russian Government has ordered all proprietors of petroleum tanks at Batoum to transfer their establishments to the harbour of Poti, because Russia intends to enlarge the naval port of Batoum and use it for military purposes, and that danger might arise from the large stocks of petroleum.

WHAT'S IN A CIGAR?—A contemporary states that a cigar contains acetic, formic, butyric, valeric, and propionic acids, prussic acid, creosote, carbolic acid, ammonia, sulphuretted hydrogen, pyridine, viridine, picoline, and rubidine, to say nothing of cabagine and burdockic acid. That's why you can't get a good one for less than twopence. We are not perhaps prepared to vouch for the whole truth of this statement, but there is evidently "something in it."

A NEW METAL OF HIGH RESISTANCE.—The Aluminium Brass and Bronze Company announces a new metal which is exceedingly tough, very ductile, and when either hard or soft drawn into wire, possesses an extreme tensile strength; for ordinary size annealed it is 86,000 lb. per square inch, and for hard drawn 136,000 lb. per square inch. Its ductility is such that the annealed wire will stand 124 twists in 6 inches, and the hard-drawn wire 30 twists. It solders with facility with resin, chloride of zinc, or any of the ordinary solders and fluxes. In electrical resistance, comparing this new metal, ordinary copper taken as 1, German silver is 13, and the new metal is 35. It is this qualification that makes it valuable for resistance work in dynamo machinery, and all electrical apparatus. Its specific gravity is about the same as copper, which it resembles in finish.

THE GLASS INDUSTRY.—The leading plate glass manufacturers at St. Helens are about to spend large sums in improved plant, principally for the finishing processes on plate glass. The rough plates are at present finished by the three separate processes of "grinding," "smoothing," and "polishing," about three days being occupied therein. Machines have, however, been constructed capable of carrying out the three processes without a single removal of the glass, and of finishing the work in about one day instead of three. These machines it is now intended to introduce, as the economy thereby effected is necessary to a continued successful competition with the French and Belgian manufacturers. It is stated that the total amount to be spent in the district in this and other improvements is about £300,000.

A DISCOVERY OF PEARLS.—The French Minister at Mexico reports that vast deposits of fossil pearl oysters have been discovered in the State of Chihuahua, on the banks of the river Couchos, which may be easily worked. A company has acquired "the find" for the purposes of exportation to the United States The Government have accorded eleven concessions for the pearl fishery off the coasts of Lower California, ten of these concessions being in the hands of the "Compagnia Perlifera," and the other has been obtained by M. G. Vivès.

EDISON ON PATENTS.—According to Edison, patents are useless. because one can never hold them, or at most can only do so after exhausting litigation which may last several years. His proposal that no one should manufacture anything till he has proved that he does not infringe anybody's patent is, of course, absurd. The great evil is the delay in enforcing legal rights. This is common to many other branches of the law. We have long felt that the practice of appealing is a waste of time and money. If two litigants are going to appeal to the House of Lords whatever happens, it would be simpler and cheaper to go to the Lords direct and give evidence there. If the litigants are not willing to abide by the decisions of a lower court, the lower court is useless. The upper courts have more than one judge, but the judges do not see the witnesses. The judges have the whole of the facts twisted up into a kind of legal tangle by counsel, and are really much less able to form correct ideas than the judge in the court of first instance.

NEW SEWERS FOR MARSEILLES.—Important sewerage works are about to be carried out in Marseilles. For some time past the death rate in this city has been alarming, and matters have got worse as time went on. In view of this fact the Municipality has at last bestirred itself, and a complete system of sewers is to be laid down. The separate system will not be adopted, but both storm water and ordinary sewage will be carried by the sewers. The new sewers will drain an area of 1,500 hectares, and will aggregate about 150 miles in length. These sewers will finally be led into one main sewer about 7·5 miles long, which will convey the sewage out to deep water, the discharge taking place near Cape Montredon in a depth of 32 fathoms. The total cost of the work is estimated at 35,000,000 francs, and a tax to cover interest and sinking fund will be laid on inhabited houses. Those with a rent of less than 500 francs will pay 20 francs per annum; those with rents of more than 10,000 francs will pay 200 francs per year. The first stone of the new works was laid by M. de Freycinet on October 8th last, and it is expected that five years will suffice to complete the works.

THE FIRE AT MESSRS. DAN RYLANDS, LIMITED.—Sixty thousand pounds' worth of damage was done last week by a fire in the box factory of Dan Rylands, Limited, Hope Glass Works, near Barnsley. The works occupy several acres of ground, but the portion burnt, consisting of the box factory and fitting shop, is apart from the remainder of the premises, standing within a curve of the Manchester, Sheffield, and Lincolnshire Railway, and covering about an acre of ground. The premises had been closed for the holidays. About half-past one a workman noticed smoke and found some sawdust on fire. The flames ran over the building, and in an hour the roof fell in, while by five o'clock the premises were completely burnt out, even the walls falling down. A large quantity of stock was destroyed, together with fitting machinery and models of several of the patent machines manufactured and used by the firm. The Barnsley fire brigade was present, but could do little beyond protecting the adjoining buildings, including workmen's cottages, many of which were threatened. The origin of the fire is unknown. About 400 hands are thrown out of employment. Much of the loss is covered by insurance.

THE ROYAL INSTITUTION.—The following are the lecture arrangements before Easter:—Professor John G. M'Kendrick, six Christmas lectures to young people, on "Life in Motion, or the Animal Machine"; Professor Victor Horsley, 12 lectures on "The Structure and Functions of the Nervous System (the Brain)"; Mr. A. S. Murray, three lectures on "Some Aspects of Greek Sculpture in Relief"; Professor E. Ray Lankester, three lectures on "Some Recent Biological Discoveries"; Professor W. P. Ker, three lectures on "The Progress of Romance in the Middle Ages"; Dr. B. Arthur Whitelegge, three lectures on "Epidemic Waves"; Professor J. H. Fleming, three lectures on "The Induction Coil and Transformer"; Lord Rayleigh, six lectures on "Matter: at Rest and in Motion"; Professor J. F. Bridge, three lectures on "Dramatic Music, from Shakespeare to Dryden (the Play, the Masque. and the Opera)," with illustrations. The Friday evening meetings will begin on January 22nd, when a discourse will be given by Lord Rayleigh on "The Composition of Water"; succeeding discourses will probably be given by Sir George Douglas, Professor Roberts-Austen, C.B., Mr. G. J. Symons, Professor Percy F. Frankland, Sir David Salomons, Professor L. C. Miall, Professor Oliver Lodge, Mr. George du Maurier, Mr. John Evans, Mr. F. T. Piggott, Professor W. E. Ayrton, and other gentlemen.

To Harden Iron.—Ox hoofs and leather are soaked in French nut oil, and are then burnt, pulverised, and mixed with sea salt and potash. The following proportions are used: 30 per cent. of hoofs, 30 per cent. of leather, 30 per cent. of sea salt, 10 per cent. of potash. This product is said to harden iron all through.

Death from Lead Poisoning.—A second death has taken place in connection with the case of lead poisoning at Messrs. Kerr and Hoegger's dyeworks, Turkey Lane, Rochdale Road, which formed the subject of a coroner's inquiry on Tuesday last week. The second victim was a sister worker of the girl Elizabeth Ellen Longworth, whose death, it was stated at the inquest, was due to the inhalation of the handling of colours largely mixed with lead.

Smoke Prosecutions.—At the Manchester City Police Court last week a fine of fifty shillings and costs was imposed upon the Lancashire and Yorkshire Railway Company in respect of an emission of dense smoke from the chimney of their premises at Hunt's Bank, and the directors of the Manchester Athenæum were also fined forty shillings and costs for a similar offence. An order to abate the smoke nuisance was made upon Messrs Alexander Kerr and Aldoph Hoegger, dyers, Grimshaw-lane, Newton Heath; Messrs. Spiers and Pond, of the Victoria Hotel, Deansgate; and Messrs. William Yates and Company, Limited, brewers, Ogden-street, Ardwick. Mr A T. Rook, superintendent of the Sanitary Department, appeared in support of the summonses on behalf of the Corporation.

A Creosote Works Burnt Down.—The plant of the creosote works, owned by Eppinger and Russell, situated in Long Island City, on Newtown Creek, was destroyed by fire recently. The works employed about 200 men. The men were all at work when the fire broke out, which, it is supposed, was caused by an explosion of chemicals. The works covered several acres of land, and the fire started in the large frame building filled with machinery. One oil tank exploded, but fortunately nobody was injured, and 1,500 barrels of tar oil went up in smoke. The loss of the company is estimated at £10,000. which is mainly in specially constructed machinery and eighteen miles of coiled pipe. The loss is fully covered by insurance.

The Production of Mica.—Mica is a combination of silicate of alumina and silicate of potash, generally containing oxides of other metals and water. It is peculiar and useful on account of its transparency, flexibility, and toughness of cleavage. Of the many varieties of mica that which is known as Muscovite, the white mica of granite, gneiss, and the older crystalline rocks, is the most useful. A variety known as phlogopite has been found in the old crystalline limestones of North America in large masses, and used as a substitute for glass for stove doors or in other places where sudden changes of temperature would cause the glass to fracture. Muscovite mica is always found in granite, but generally in small flakes, occasionally, however, in coarse granite or pegmatite veins, large crystalline plates are found sometimes as much as two feet across. Mica is valuable in proportion to the size of the plates, the minimum size for the market being about 3 inches by 4 inches.

Coal in Alaska.—Two gentlemen who have just returned to San Francisco from the Niga Islands, Alaska, report that valuable coal mines are already being worked on one of the Shumagin group, 900 miles west of Sitka, and that the product will be placed on the San Francisco market this year. From four to six workable veins, each five or six feet thick, lie one above the other about 30 feet apart. These veins, it is said, can be traced for two miles, and the supply is virtually inexhaustible. It is asserted that cargoes can be delivered in San Francisco at $4 per ton. An analysis it is reported, shows the coal to be somewhat superior to the Seattle product; but, like all Pacific coast coals, it is of lignitic formation, and carries a large percentage of moisture.

Market Reports.

MISCELLANEOUS CHEMICAL MARKET.

Business in most chemicals has been somewhat quiet during the week, as is not unusual at this time of the year. Bleaching powder firm and moves freely at the advanced price. For contracts over the whole year £7. 5s will still be accepted. Caustic soda sells fairly well at former prices. Soda ash dull, and sales are difficult to effect. Prices generally are weaker, though current quotations remain the same. Soda crystals in moderate request at £3. 9s. casks, £3. 3s. bags, rails works. Saltcake quiet and without change. Chlorate of potash is still at 5¾d., and makers are able to meet orders without difficulty. Soda continues scarce and only odd lots are obtainable for prompt delivery, price 7d. per lb. Recovered sulphur in good demand, but quantity offering is very small. Muriatic acid goes off well, but the supply at present is not very abundant. Vitriol is well enquired after and prices, if anything, have a tendency to advance Litharge quiet at £15. per ton. Lead salts neglected. Foreign white still quoted £27. c.i.f, but re-sale parcels are offering at lower prices. Brown, £18 10s.; English white, £27. 10s.; nitrate, £20. 10s. Acetate of soda steady and in good request at £18. 10s to £19. per ton. Acetates of lime sell moderately well for spot delivery, but there is not much inclination on the part of buyers to contract for forward supplies. We quote brown, £7. 5s.; grey, £10. 5s. Sulphate of copper about the same. Sulphocyanides in want of improvement, and not much business passing, 5d. to 5¼d. for barium, and 7¼d. for ammonium are full values to-day. Carbolic acids flat, and are being disposed of at very unremunerative prices. Nitrate of soda steady at 9s. 3d.

THE METAL MARKETS.

LONDON, Wednesday.—Pig iron quiet; Scotch warrants closed at 47s. cash. Middlesbrough 38s. 1d. cash, and hematite 48s. cash. Copper quiet; Chili bars, G.O B's. and G.M B's. closed at £46 cash, and £46. 12s. to £47. three months. Tin easier; Straits closed at £90. 7s. 6d. to £90. 17s. 6d. cash, and £90. 10s. to £91. three months. Australian, £90. 10s. cash; English ingots, £94. to £94. 10s. Lead steady: Spanish, £11. 5s. to £11. 6s. 3d.; English, £11. 7s. 6d. to £11. 12s. 6d. Silesian spelter, ordinary, £22. 12s 6d. Quicksilver unsettled: First hands, £8., second hands, £7. 13s. Copper shares steady; Cape 1 13/16 to 1 15/16; Copiapo 2 7/16 to 2 9/16; Libiola 2¾ to 3; Mason and Barry 5 1/16 to 5 3/16; Rio Tinto 18¾ to 19; Tharsis 5⅞ to 6; Namaqua 1⅜ to 1⅝; Panulcillo 13/16 to 15/16.

GLASGOW, Wednesday.—Market steady, with small business. No Scotch done; closing with buyers at 47s. cash and 46s. 10½d one month, sellers ask 47s. 1d. cash and 47s. 3d. one month. Middlesbrough closes with buyers at 38s. 1d. cash, and 38s. 3½d. one month, sellers ask 1d more. Hematite done at 48s., 48s. 1d., and 48s. 0½d. cash, also at 48s. 4d. and 48s. 3½d. one month, closing with buyers at 48s. cash, sellers ask 48s. 1d.

WOLVERHAMPTON, Wednesday.—Fair business done to-day. Trade looks promising for the quarterly meetings next week. Pigs in good inquiry for 500 and 1,000 ton lots. Prices firm at 46s. 6d. to 47s. at works for South Yorkshires and Derbyshires, and 1s. less for Northamptons, March deliveries; Lincolns 48s. 6d. to 49s. at stations. Staffordshire cinder pigs 37s. 6d. Sheet iron prices easier. Doubles £7. 5s. upwards, singles £7. upwards. Galvanised sheets £11. 15s. upwards. Hoops £6. 15s. Common bars £6.

TAR AND AMMONIA PRODUCTS.

The market for benzol continues to be completely demoralised. As soon as a few sales in benzol have been effected buyers again withdraw. Business in 90% has been done a few days ago at 2s. 2d., but to-day the value can scarcely be called more than 1s. 11d. to 2s. 50-90's has been done at 1s. 9d., but there are no more buyers at this price. In anthracene prices are quite nominal, as no transactions seem to have taken place for some weeks. Quotations now are 12½d. to 1s. for 30% A, and 9d. to 9½d. for 30% B. Most other tar products are in a very unsatisfactory position, and it is most probable that large quantities of creosote could be bought to-day for less than 1d. Pitch, however, remains firm, and 34s. 6d may be considered to-day's value at East and West Coast ports.

A great improvement has taken place during the past few days in the sulphate of ammonia market, chiefly owing to the eagerness manifested by the buyers to cover sales; they having evidently taken fright at the turn events have recently taken. A fair amount of business has been done at £10. 10s. London, while Beckton has raised its price to £10. 15s. Hull value may be taken as £10. 10s.; and Leith £10. 8s. 9d. to £10. 10s.

REPORT ON MANURE MATERIAL.

N.B.—It has been found necessary to withhold our report until next week, when our *Special Issue* will be published, in which, in addition to the usual market report, a review of the manure industry for the past year of 1891 will also appear.—Ed. *C.T.J.*

THE LIVERPOOL MINERAL MARKET.

On account of the prevailing holidays, and many of the works being stopped for repairs, our market has been very quiet this week. Manganese: Arrivals have somewhat improved, but they have gone direct into consumption. Stocks have been further reduced, and busi-

ness has been done at higher figures. Borate, 6¼d. per lb.; sulphate, £20. 10s.; oxalate, 1s. 6d. per lb.; chloride, £15.; carbonate, £12. 10s., steady. Magnesite: Raw lump quiet. Raw ground, £6. 10s. and calcined, £12. 10s. Bauxite (Irish Hill brand): Notwithstanding this time of the year being bad for shipments this mineral is very brisk, and brings full prices—lump, 20s; seconds, 16s.; and thirds, 12s. French chalk: Although at the end of the year consumers do not care to take in supplies, a fair business has been done at full figures for G.G.B. "Angel White" brand; silvery, 90s. to 92s. 6d.; prime quality, 90s. to 95s.; superfine, 105s. Barytes: Carbonate, prime lump still scarce, being quoted at 90s. to 95s.; nuts, 70s. to 80s.; whilst finest white sulphate is steady. "Angel White," No. 1, 70s.; No. 2, 60s. to 65s.; No. 3, 45s. Pumice-stone steady. Iron ore easy: Manganiferous, Santander, Bilbao, Irish, and Cumberland firmer. Emerystone steady, No. 1 lump £5. 10s. to £6., smalls £5. to £5. 10s. Fullers' earth better; best lump, 55s.; fine impalpable ground, £7.; "Emerald" ground, 80s. Scheelite, wolfram, tungstate of soda, and tungsten metal in strong demand. Chrome ore continues to be inquired for, especially high-class qualities. Antimony ore and metal firmer. Asbestos firm. Potter's lead ore of best quality steady; smalls, £12. 10s. to £13. 15s; selected lump, £14. 10s. to £15. 10s. Calamine quiet. Strontia sulphate (celestine) little doing. Limespar in better demand, especially for English manufactured, old G.G.B. brand in demand at 50s (ground). Felspar quiet. Fluorspar: Best quality steady. Ferro Manganese firmer, 75%, £12; 85%, £13. 15s. Plumbago brisk: Spanish, £5.; best Ceylon lump at last quotations; Italian and Bohemian, £4. to £12. per ton. "Founders," £5. to £6.; Blackwell's "Mineraline," £10. French sand, 20s. to 22s. 6d. Ground mica, £45. to £50. China clay steady; common, 18s. 6d; good medium, 22s. 6d. to 25s.; best, 30s. to 35s. (at Runcorn). Bog ore (oxide of iron) steady; finest quality, 22s. to 23s.

THE LIVERPOOL OIL AND COLOUR MARKET.

LIVERPOOL, WEDNESDAY.

OILS.—In palm oil the holiday quietness still prevails, but holders are firm, and there is only a limited quantity offering, and there have been very few sales. Olive is steadier but quiet, and is moving gently at recent figures. Linseed: There has not been much doing, but prices remain firm at 19s. 6d. to 20s. 6d per cwt., in export casks. Rape: Refined Stettin was somewhat easier early in the week, but it is firm again at 32s. 6d. to 33s. Cotton seed: Liverpool refined declined slightly last week, but is now steady at 19s. per cwt., whilst American refined is quoted at 19s. 6d. to 20s. per cwt. Castor oil has but a very quiet demand for good seconds Calcutta at 2¾d., and first pressure French at 2⅞d. per lb. Tallow has a firm market, and has a continued demand which is fair, whilst prices remain unaltered. Resin has been somewhat depressed, and common has declined to 4s. 6d.. at which there is a fair business doing. Spirits of turpentine has had a steady demand at last week's quotation, namely, 26s. per cwt. Petroleum is steady, with American at 5½d. to 6⅜d., according to quality, and Russian refined 4½d. to 4⅝d. per gallon.

COLOURS quiet, without alteration in prices. Ochres: Oxfordshire, common, £10., medium, £12., best, £15.; Derbyshire, common, 40s., medium 50s., best, 60s. Welsh, best, 70s., seconds, 50s., and common, 18s.; Irish, Devonshire, 40s. to 45s.; French, J. C., 55s. to 60s.; M. C., 65s. to 67s. 6d. Umber: Turkish quiet. Devonshire, 50s. to 55s. White lead, red lead, and oxide of zinc unchanged. Venetian red, £6. 10s. to £10. Cobalt: Prepared oxide, 10s. 6d.; black, 9s. 9d.; blue, 6s. 6d. Zaffres: No. 1, 3s. 6d.; No. 2, 2s. 6d. Oxide of iron: common, £6.; medium, £10.; finest, £20.

WEST OF SCOTLAND CHEMICALS.

GLASGOW, TUESDAY.

All the works in these parts closed last week for the New Year holidays, most of them on the 31st, but two or three also a day earlier. Demand for most chemicals has long been so moderate that stocks in many cases are over-abundant at works, and the excuse for stopping production has therefore been pretty generally welcomed. The bulk of the makers are resuming to-day, but a few of them will linger a day or two longer.

The chief market event is the further raising of bleaching powder by the Union, to the extent of 5s., making the price £7. 7s. 6d. Tyneside delivery. This constitutes an advance of nearly £3. a ton from the low-water mark of eighteen months ago. There has been very little doing in the article, and chemicals generally have also been very idle, but without any notable change in selling conditions.

Shipments of sulphate of ammonia were down to a minimum last week, summing to 157 tons only, or lower than at any time for six months. Spot price has not improved upon last week's quotation, and still stands at £10. 2s. 6d. on a very sluggish market Forward delivery is talked of at about £10. 10s. to £10. 11s. 3d. f.o.b. Leith.

In paraffins, the deliveries of burning oil for Scotch consumption are still up to makers' expectations, but must soon begin to take off. Scale and wax continue the steadiest of the group, but lubricating oils, especially in the lower gravities, need recuperation.

Chief prices current are:—Soda crystals £3. 2s. 6d., nett Tyne; alum in lump, £5. 10s., nett Glasgow; soda ash, 1⅜d., less 2½%, Tyne; caustic soda, white, 74°, £11. 5s., 70/72°, £10. 5s., 60/62°, £9. 2s. 6d., and cream 60/62°, £8. 17s. 6d., all nett Liverpool; bicarbonate of soda, 5 cwt. casks, £6. 15s., and 1 cwt. casks, £7. nett Tyne; refined alkali, 1⅜d., less 5% Tyne; bleaching powder, £7. 7s. 6d. nett Tyne; saltcake, 37s. 6d.; borax, English, refined, £29. 10s. and boracic acid, £37. 10s., nett Glasgow; bichromate of potash, 3¾d., less 10% for Scotch and English deliveries (for export 3½d., less 10% f.o.b. Glasgow); bichromate of soda, 2¾d., less 10% for Scotch and English deliveries (for export 2½d., less 10% f.o.b. Glasgow); chlorate of potash, 5⅜d., less 5% any port; nitrate of soda, 9s. 3d.; sulphate of ammonia, £10. 2s. 6d. f.o.b. Leith; salammoniac, first and second white, £35. and £33., less 2½% any port; sulphate of copper, £15. less 5% Liverpool; paraffin scale (hard), 2⅛d., and soft 2⅛d. to 3d. per lb.; paraffin wax, 120°, semi-refined, 3⅝d. to 4d.; paraffin spirit (naphtha), 7d. a gallon; paraffin oil (burning) 5d., 5¼d. and 5½d. according to kind, at works for Scotch buyers (English orders about 1d. lower); ditto (lubricating), 865°, £3. 15s. to £4., 885°, £5. 5s. to £7., and 890/895°, £6 to £8. Week's imports of raw sugar at Greenock were 29,248 bags.

TYNE CHEMICAL REPORT.

TUESDAY.

Market quiet; business for the new year can hardly be said to have fairly commenced yet. What trade there has been doing has been principally in bleach and caustic soda. For the latter product there is rather a better demand. Inquiry still continues good for sulphate of soda. Present prices are as follows:—Bleaching powder, softs, £7. 10s. per ton, hards £7. 15s. per ton; caustic soda, 77% £11. 10s. per ton, 70% £10. 5s. per ton; recovered sulphur, in 2 cwt bags, £6. 10s. per ton (extremely scarce); soda ash, 48% £5. 8s. 9d. per ton, 52% £5. 17s. 9d. per ton, 56% £6 6s. 9d. per ton; alkali, 36% £4 18s. 6d. per ton; white alkali, 48% £6 10s. per ton, 50% £6. 15s. 6d. per ton, 52% £7. per ton; hyposulphite of soda, £7. per ton in 5-7 cwt. casks, £7. 15s. per ton in 1 cwt. kegs in 10 ton lots; silicate of soda, 75° Tw. £2. 13s. 6d. per ton, 100° Tw. £3 13s. per ton, 140° Tw. £4. 2s. 6d. per ton; soda crystals, in casks, £3. 3s 6d. per ton gross weight, in ½ cwt. bags £3. 3s. 6d. per ton gross weight, f.o.b., on rails £3. 1s 3d. per ton; sulphate of soda, in bulk 37s. to 40s. per ton, in 2 cwt. bags 5s. per ton extra; chlorate of potash, 5⅜d. per lb. less 6%; pearl hardening, £3. 10s. per ton nett; pure white sulphate of alumina, £4. 10s. per ton nett; blanc fixe, £7. 10s. per ton nett; chloride of barium, £7. 10s. per ton; nitrate of baryta crystals, £17. per ton, ground £17. 10s. per ton; sulphide of barium, £7. per ton; carbonate of alumina, £28. 10s. per ton; aluminate of soda, £33. 10s. per ton; hydrate of barium, £11. per ton.

The present price of common salt is 9s. per ton f.o.b. Tees; very little doing.

Coals: A settlement of the wages question in Northumberland has been amicably arrived at, the miners agreeing to a reduction of 5%. For gas coals 9s. 6d. per ton f.o.b. is present price for prompt, but for forward rather less is asked. Best Northumberland steam, 10s. 3d. per ton; bunker coal quiet. Manufacturing coal unaltered, with rather better demand. Coke firm at 16s. per ton f.o.b.

Gazette Notices.

PARTNERSHIPS DISSOLVED.

A. TREMEARNE AND A. P. CHARLES, under the style of Smith and Charles, Southsea House, Bishopsgate street, E.C., tallow and petroleum brokers.

WEBBER AND STEDHAM, Torquay, cement and brick manufacturers.

A. SMITH AND F. SWINDELL, under the style of Pegg and Company, Derby, King's Mills, near Castle Donington, Aston-on-Trent, and Chellaston, colour plaster, mineral, and barytes manufacturers.

MARY STARK AND W. J. DAWSON, trading as J. C. Williamson and Co, Newcastle upon-Tyne, chemical merchants and brokers.

C. Massey and Son, Newcastle-under-Lyme, artificial and bone manure manufacturers

Law Bros., Liverpool, chemical and produce brokers.

T. A. Sherriff and A. Whiteley, New Wakefield-street, Oxford-road, Manchester, soap and size manufacturers.

New Companies.

Ainsworth Vale Company, Limited.—This company was registered on the 24th ult, with a capital of £10,000., in £1. shares to enter into the agreement referred to in clause 2 of the articles, and to carry on the business of spinners, weavers, bleachers, finishers printers, dyers, and paper manufacturers. The subscribers are :—

	Shares.
C. E. Kay, 26, Lombard-street, E.C.	1
J. E. Hutter, 36, Lewisham High-road, merchant	1
H. W. Ripley, 1 King's-road, Clapham Park, S.W.	1
P. Shielman, 11, Mornington Place, Regent's Park, N.W.	1
E. A. D. Gibbs, 29, Mincing-lane, E.C.	1
A. E. Cocks, 8, Feiron-road, Clapton, N.E.	1
L. Lye, 28, Acacia-road, Walthamstow	1

Hele Paper Company, Limited.—This company was registered on the 24th ult., with a capital of £50,000, in £10 shares, to adopt an agreement dated 10th December, 1891, between Mr. T. H. Hepburn, of the one part, and Mr. J. Bicknell (for the company) of the other part, for the transfer to the company of the business of paper manufacturers, carried on at Hele, Devon, and to carry on the same. The subscribers are :—

	Shares.
T. H. Hepburn, Hele, Cullompton, paper-maker	1
Mrs. T. H. Hepburn, Hele, Cullompton	1
A. Dickson, Hele, Cullompton, paper-maker	1
A. R. Robinson, Backwell, seed crusher	1
Edgar Robinson, Keynsham, near Bristol	1
Edward Robinson, 1, Redcliffe-street, Bristol	1
H. H. Cozens Hardy 207, New-square, Lincoln's Inn	1
J. Horsburg, The Hollies, Surrey Gardens, Hendon	1

Mineral Syndicate of Smyrna, Limited.—This company was registered on the 24th ult., with a capital of £15,000., in £5. shares, to carry on in England, Turkey, and elsewhere the business of manufacturers of emery flax, ferro-aluminium, copper, etc., ironmasters, colliery proprietors, coke manufacturers, chemical manufacturers, engineers, etc. The subscribers are :—

	Shares.
H. Allen, 12, Delahay-street, Westminster	1
C. N. Jones, 32, Great George-street, S.W., surveyor	1
F. Galsworthy, 3, Staple Inn, Holborn	1
J. M. McDonnell, 2, Kingsmead-road, Tulse Hill, solicitor	1
A. G. Weddell, Butchett House, Dorking	1
V. Lambley, 35, Crondace road, Fulham	1
J. E. Young, 54, Cheriton-square, Upper Tooting	1

The Patent List.

This list is compiled from Official sources in the Manchester Technical Laboratory, under the immediate supervision of George E. Davis and Alfred R. Davis, who report professionally upon the value of Chemical Patents.

APPLICATIONS FOR LETTERS PATENT.

Coal Distilling Retorts. J. A. Yeadon and W. Adgie. 22,292. December 21.
Producing Solid Petroleum. J. H. Hedley 22,297. December 21.
Improvements in the Manufacture of Chlorine. La Societe A. R. Pechiney and Cie 22,320. December 21.
Boiler Anti-Incrustation Compounds. W. R. Earp. 22,333. December 21.
Primary and Secondary Batteries. N. Wladimiroff. 22,339. December 21.
Manufacture of Carbonic Acid and Hydrogen Gases. J. Pullman and H. S. Elworthy. 22,340. December 21.
Recovering Cyanides from Coal Gas. W. L. Rowland. 22,347. Dec 22.
Improvements in certain Colours and Pigments. W. Grimshaw. 22,348. December 22.
Improved Soap. J. Kennedy. 22,363. December 22.
Ornamented Water-proofed Fabrics. G C Mandleberg. 22,382. Dec. 22.
" " " " " 22,386. Dec. 22.
Manufacture of "White" Lead. R B. Johnson and T. C. Palmer. 22,391. December 22.
Improved Slack Burning Furnaces. W. P. Thompson. 22,402. Dec. 22.
Cleaning Waste Oil. A Smith. 22,430. December 23.
Recovering Waste Gases and other Products from Breweries. A. Freundlich. 22,432. December 23.
Bleaching Paper Pulp, etc. C. Kellner. 22,437. December 23
Increasing the Bleaching Properties of Chlorine Gas. C. Kellner. 22,438. December 23.
Treating Sewage and other Liquids. J. Hanson. 22,442. December 23.
Colouring Matters. C. D. Abel. 22,467. December 23
Improvements in Sulphate of Ammonia Apparatus. E Bennis. 22,474. December 23.
Improved Process for the Preparation of Nitric Acid. E. Edwards. 22,481. December 23.
Furnaces for Burning Sulphurous Ores. I. S. McDougall. 27,504. December 24.
Refuse Destructors. W. Horsfall 22,531. December 24.
Manufacture of Strontium and Barium Carbonates. J. Brock and J. T. Marsh. 22,541 December 24.
Treating Iron Ores for Purifying Impure Water, etc. C. E. Bell. 22,545. December 24.
Purifying Sewage and other Contaminated Waters. W. Lawrence. 22,546. December 24.
Manufacture of Ferricyanides. A. M Clarke. 22,558. December 24
Recovering Salts from Brine and Solutions. H. Williams. 22,655. Dec. 29.
Zinc Reduction Furnaces. E. Dor. 22,694. December 29.
Concentrating Sulphuric Acid. H. H. Lake. 22,704. December 29.
The Production of Enamelled Iron Ware. H. Claus. 22,732. Dec 29.
Improvements in the Production of Carbonic Acid Gas and Lime. H. C. Bull 22,746. December 30.
Purifying Sewage. J. T. Wood. 22,747. December 30.
Producing Pure Saccharine. C. Fahlberg. 22,787. December 30.

IMPORTS OF CHEMICAL PRODUCTS
AT
THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending December 24th.

Acetic Acid—		
Holland,	400 pks.	Beresford & Co
France,	1	Arnati & Harrison
Holland,	90	A. & M. Zimmermann
Acetone—		
Holland,	1 pk.	Barr, Moering & Co.
Alkali		
France,	440 c.	Arnati & Harrison
Alum—		
Holland,	109 pks.	Ohlenschlager Bros.
Alumina Sulphate—		
Holland,	40 pks.	Beresford & Co.
Barytes—		
Germany,	46 cks.	W. Harrison & Co.
"	23	Pillow, Jones & Co.
"	24	W. Jacobs
Belgium,	11	J. L. Lyon & Co.
"	45	Magee, Taylor & Co.
Brimstone—		
Italy,	300 t.	W C. Bacon & Co.
"	50	Burden & Co.
"	200	Brandram Bros. & Co.
Caoutchouc—		
Portgual,	9 c.	S. Figgis & Co.
"	99	Prop. Bull. Wf.
"	11	Anderson, Weber & Smith
Germany,	63	L. & I. D. Jt. Co.
U. S.,	24	Hale & Son
Penang,	130	L. & I D. Jt Co.
Holland,	80	J. Barber & Co.
U. S.,	29	Major & Field
France,	119	Wallace Bros.
Germany,	59	Prop. Bull. Wf.
Carbon—		
Holland,	205 pks.	Phillipps & Graves
Carbonic Acid Gas—		
Holland,	65 pks.	J. Barber & Co.
Caustic Potash—		
France,	37 c.	Petri Bros.
"	100	T. W. Berk & Co
"	13 dms.	J. A. Reid
Chemicals *(otherwise undescribed)*		
Germany,	£18	Magee, Taylor & Co.
"	10 pks.	Craven & Co.
"	9	T. H. Lee
"	96	A. & M. Zimmermann
Denmark,	7	Bailey & Leetham
Germany,	12	Becker & Ulrich
France,	8	Pokorny, Fielder & Co.
Cream of Tartar—		
Spain,	24 pks.	Bacon & Co.
France,	51	B. & F. Wf. Co.
"	5	W. C. Bacon & Co.
Holland,	10	Middleton & Co
Italy,	43	Thames S. T. & L. Co.
Dyestuffs—		
Anthracene		
Spain,	142 pks.	Burt, Boulton & Co.
Argols		
Italy,	200 pks.	Thames S T. & L. Co.
Cochineal		
Canary,	6 pks.	Lewis & Peat
"	11	Swainston & Co
"	22	F. Huth & Co.
"	38	Johnson, Hicks & Co.
Cutch		
Rangoon,	86 pks.	Prop. Bull Wf.
Extracts		
Belguim,	55 pks.	L. J. Levinstein & Son
Canada,	80	A. J. Humphrey
"	160	Boutcher, Mortimer & Co.
Austria,	106	A. J. Humphrey
France,	370	L. J. Levinstein & Son
Fustic		
Cuba,	42 t	Melchers, Runge & Co.
Gambier		
Singapore,	219 pks.	Brinkmann & Co
China,	436	L. & I. D. Jt. Co.
Singapore,	92	Barrow & Bro., Ld.
"	322	R. & J. Henderson
"	71	G. Ward & Son
Indigo		
E Indies,	81 chts.	L. & I. D. Jt. Co.
"	15	Parsons & Keith
"	94	Barlow & Bros.
Logwood		
Jamaica,	10 t.	L. & I. D. Jt. Co.
Sumac		
Italy,	65 pks.	Laming & Co.
"	200	G. Lewis
"	200	Beresford & Co.
"	150	Sollas & Sons
"	600	J. Kitchin, Ld.
"	988	Brown & Elmslie
Tanners' Bark		
Natal,	6 t.	A & W. Nesbitt
A. Turkey,	30	"
"	100	Hicks, Nash & Co.
Natal,	26	Boutcher, Mortimer & Co.
Belgium,	22	Leach & Co
"	5	Oastler, Palmer & Co.
Cape,	12	Dyster, Nalder & Co.
Belgium,	41	Arnati & Harrison
Turmeric		
China,	140 pks.	H. A. Litchfield Co.
Valonia		
A. Turkey,	97 t.	A. & W. Nesbitt
"	56	J. Graves
"	100	Boutcher, Mortimer & Co.
"	70	Beresford & Co.
Farina—		
Holland,	150 pks.	M. Measday
"	234	R. G. Hall & Co.
"	40	J. Knill & Co.
Glucose—		
U. S.,	25 pks. 150 c.	France & Co.
"	275	613 Prop. Chmblns. Wf.
"	500	500 J Forsey
"	50	280 Page, Son & East
"	20	80 Fellows, Morton, & Co.
"	750	750 Barrett, Tagant & Co.
"	500	500 Devitt & Hett
"	1400	1850 J. Barber & Co.
"	25	140 W. Isted
"	1300	1550 R G. Hall & Co.
"	600	600 Union Lthrge. Co.
"	400	400 Lichtenstein & Co.

,, 450 450 Tennant, Sons & Co.
,, 75 449 R. G. Hall & Co.
Germany, 35 45 Hicks, Nash & Co.
France, 4 44 F. Fink & Co.

Manure—
Germany, 50 t. Hunter & Co.

Naphtha—
Holland, 4 drs. Lister & Biggs
Belgium, 30 Stein Bros.
Germany, 16 Domeier & Co.

Ochre—
Holland, 4 cs. Phillipps & Graves
France, 100 brls, C. F. Gerhard

Painters' Colours—
Germany, 29 pks. L. & I. D. Jt. Co.
,, 2 cks. H. Lambert
Belgium, 11 T. H. Lee
Austria, 11 Beck & Pollitzer
France, 9 pks. Flageollet & Co.
Germany, 12 Phillipps & Graves
,, 4 Burrell & Co.
Holland, 58 C. Tennants, Son & Co
Italy, 29 Magee, Taylor & Co.
Germany, 5 R. Winstone & Sons
Belgium, 4 Arnati & Harrison
France, 2 Bennett S. S. Co.
Holland, 67 C. S. Lovell

Paraffin Wax—
U. S., 530 brls. Hill & Son
,, 135 Produce Bkr's Co.
,, 1000 J. H. Usmar & Co.
,, 4 cs. H. W. Peabody & Co.

Pearl Ashes—
France, 221 c. Petri Bros.
Holland, 80 F. W. Berk & Co.

Phosphate Rock—
Belgium, 135 t. Odams Chemi. Mnre. Co.
,, 490 Anglo Cntnl. Guano Wks.
,, 50 Fox, Roy & Co.
France, 170 A. Hunter & Co.
,, 350 Anglo Cntnl Guano Co.
Belgium, 200 London Manufe Co

Plumbago
Germany, 44 cks. Le Sueur & Co.
Holland, 62 B. Gallaway.
,, 17 H. Lambert
France, 19 Aitkens & Nesbitt
,, 7 Flageollet & Co.

Potassium Carbonate—
Germany, 10 cks. Beresford & Co.
France, 40 c. Spies, Bros. & Co.

Potassium Muriate—
Holland, 25 pks. Johnson & Son

Potassium Permanganate
Holland, 15 pks. J. Owen
,, 15 H. Boyce

Potassium Sulphate—
France, 40 pks. Weatherley, Mead & Co.
Belgium, 1 Elkan & Co.
Germany, 152 D. de Pass & Co.

Quicksilver—
Italy, 50 flasks H. Bath & Son

Salammoniac—
Holland, 11 pks. Barr, Moering & Co.

Saltpetre—
Germany, 60 cks. J. Hall & Son
,, 70 Merry & Son

Soda—
Portugal, 960 c. G. Harvey

Sodium Acetate—
France, 75 pks. Barr, Moering & Co.

Sodium Hyposulphite—
Holland, 200 pkgs. J. Owen

Sulphuric Acid—
Belgium, 5 pks. Union L. Co. Ld.

Tartaric Acid—
France, 7 pks. W. C. Bacon & Co.
Holland, 7 B. & F. Wf Co.

Ultramarine—
Germany, 24 pks. 10 cs. G Steinhoff
Holland, 3 3 Hernu, Peron & Co
,, 4 cks. A G. Souter & Co.
Belgium, 1 Leach & Co.
Germany, 14 pks. H. Brooks & Co.

Varnish—
U. S., 2 pks. Neale & Wilkinson
,, 4 J. M. Wimble
Germany, 16 H. Lambert
U. S., 10 Allan Bros. & Co.

Verdigris—
Holland, 6 pks. B. & F. Wf. Co.

White Lead—
Germany, 4 cks. Elkan & Co.
,, 109 Randall Bros.
Holland, 15 J. Matton
,, 19 A. & M. Zimmermann
,, 18 Burrell & Co.
,, 15 J. Matton
,, 22 Storer & Sons, Ld.
,, 45 M. Ashby, Ld.
France, 46 W. Harrison & Co.

Zinc Oxide—
U. S., 300 brls. M. Ashby, Ld.
Holland, 110 ,,
,, 500 cks. Soundy & Son

LIVERPOOL.

Week ending December 31st.

Acetic Acid—
Rotterdam, 17 btls.

Acetate of Lime—
New York, 894 bgs.

Barytes—
Rotterdam, 5 cks.
In transit, 206
Antwerp, 40 130 bgs.

Boracic Acid—
Leghorn, 62 cks.

Calcium Sulphate—
Genoa, 200 bgs.

Caustic Soda—
In transit. 50 cks.

Ceresine—
Hamburg, 12 cs.

Chemicals *(otherwise undescribed)*
Rotterdam, 10 cks.
Rouen, 34

Cream of Tartar
Rotterdam, 1 cks
Bordeaux, 5
Tarragona, 5
Genoa, 6 Sasche & Klemn

Dyestuffs—
Argols
Patras, 9 bls. F. D. Frangupolo & Co.
Cochineal
Gd. Canary, 20 bgs. Widow, Duranty & Son
,, 5 T. M. Ceballos
,, 5 Swainston & Co.
Cutch
Rangoon, 215 cs.
Orchella
Colon, 12 bls.
Sumac
Palermo, 150 bgs. J. Kitchen, Ld.
,, 175 bls.
Valonia
Patras, 250 bags Barff & Co.

Glucose—
New York, 50 bls.

Manganese—
Coquimbo, 1051½ t. Balfour, Williamson & Co.
Gothenburg, 160 Macqueen Bros.

Paraffin Wax—
Baltimore, 60 brls.

Phosphate—
Antwerp, 20 t.
Treport, 300 Phosphate Co.

Phosphate Rock—
Charleston, 300 t.
Antwerp, 260

Pitch—
Amsterdam, 26 cks.
Antwerp, 26

Plumbago—
Hamburg, 62 brls.

Potash Salts—
Hamburg, 3706 bgs.

Potassium Carbonate—
Stettin, 20 cks.

Pyrites Sulphate—
Huelva, 2430 t. Matheson & Co.

Quicksilver
Gijon, 340 flasks J. Batt & Co.

Saltpetre—
Hamburg, 50 cks.

Soap—
Bari, 167 css.
Leghorn, 50

Soapstone
Genoa, 500 bgs W. Harrison & Co.
Bordeaux, 1,000 4 cs. G. G. Blackwell

Sodium Nitrate—
Rotterdam, 10 cks.

Stearine—
Antwerp, 26 bgs. Fletcher & Co.

Sulphur—
Catania, 50 bgs.

Sulphur Ore—
Huelva, 1084 t. E. W. Turner

Tar—
Hamburg, 60 cks.

Tartar—
Bordeaux, 14 cks.
Naples, 2

Tartaric Acid—
Rotterdam, ck. 20 kgs.
Messina, 19

Ultramarine—
Rotterdam, 13 cs. 13 cks.
Bremerhaven, 20

Waste Salt—
Hamburg, 502 bgs.

Zinc Ashes—
Rouen, 24 cks. Co-op. W'sale Scty.

Zinc Oxide—
Antwerp, 15 brls. J. T. Fletcher & Co.
,, 85
St. Nazaire, 38

Zinc White—
Hamburg, 40 cks.

GLASGOW.

Week ending December 29th.

Acetate of Lime—
New York, 210 bgs.

Barytes—
Rotterdam, 227 cks.

Chrome Alum—
Rotterdam, 16 cks. Jas. Rankine & Son

Cream of Tartar—
Rotterdam, 20 cs.

Dyestuffs—
Alizarine
Rotterdam, 115 cks. 4 css.

Glucose—
New York, 450 brls.
Rouen, 24 cks.

Ochre—
Rouen, 65 cks.

Rosin—
Charleston, 2525 brls. Wm. N. Gemmill

Tar—
New York, 300 brls.

Tartaric Acid—
Rotterdam, 4 cks.

Waste Salt—
Hamburg, 101 bgs.

White Lead—
Rotterdam, 46 cks.

HULL.

Week ending December 23rd.

Barytes—
Rotterdam, 22 cks. Lawson & Son
,, 23 Johnson Bros.
Antwerp, 49 Bailey & Leetham

Binitrobenzol—
Rotterdam, 5 cs. Lawson & Son

Benzodine Sulphate—
Rotterdam, 1 brl. Lawson & Son

Chemicals *(otherwise undescribed)*
Rouen, 1 ck. Wilson, Sons, & Co.
Dunkirk, 20 pks. ,,
Bari, 4 ,,
Hamburg, 61 ,,

Dyestuffs—
Alizarine
Rotterdam, 18 brls. W. & C. L. Ringrose
,, 15 cks. ,,
,, 8 Lawson & Sons
Argols
Bordeaux, 59 bgs. Rawson & Robinson
Madder
Marseilles, 2 cks.
Sumac
Trieste, 25 bgs. Wilson, Sons, & Co.
Palermo, 350

Farina—
Stettin, 200 bgs. Wilson, Sons, & Co.
Ghent, 96 cs. ,,
Harlingen, 950 W. & C. L. Ringrose

Glucose—
Stettin, 24 cks. Wilson, Sons, & Co.
New York, 300 brls. ,,
Rotterdam, 20 kgs. Hutchinson & Son

Kainit—
Hamburg, 80 t. Lawson & Sons

Naphthaline—
Rotterdam, 1 ck. Lawson & Sons

Ochre—
Marseilles, 237 cks. Wilson, Sons, & Co.

Plumbago—
Hamburg, 9 cks. F. B. Grotrian
,, 16

Saltpetre—
Hamburg, 5 cks.

Soap—
New York, 500 bxs. Wilson, Sons, & Co.
Leghorn, 250 ,,
Marseilles, 2 cs.

Soda—
Rotterdam, 225 brls. Reckitt & Sons
,, 3 Wilson, Sons, & Co.

Tar—
Marseilles, 17 cks. Wilson, Sons, & Co.
,, 80

Tartar—
Bordeaux, 13 cks. Rawson & Robinson

Tartaric Acid—
Bordeaux, 13 cks. Rawson & Robinson

White Lead—
Rotterdam, 13 cks. Sissons, Bros., & Co.
Antwerp, 86

TYNE.

Week ending December 24th.

Barytes—
Rotterdam, 132 cks. Tyne S. S. Co.

Manganese Ore—
Poti, 600 t.

Soap—
Malmo, 20 cs.

GRIMSBY.

Week ending December 19th.

Chemicals *(otherwise undescribed)*
Hamburg, 9 pks.

Farina—
Hamburg, 98 bgs.

Zinc Ashes—
Antwerp, 17 cks.

GOOLE.

Week ending December 16th.

Alkali—
Rotterdam, 2 cks.

Alum—
Rotterdam, 169 cks.

Antimony—
Boulogne, 1 ck.

Copper Pyrites—
Huelva, 518 t.

Dyestuffs *(otherwise undescribed)*
Boulogne, 79 cks 7 cs. 4 pks.

Dyestuffs—
Alizarine
Rotterdam, 55 cks. 53 pks.
Fustic
Punta Arenas, 886 t.

Farina—
Hamburg, 300 bgs.

Glucose—
Hamburg, 13 cks.
Calais, 300 bgs.

Potash—
Dunkirk, 13 dms.
Calais 20 brls.

Potassium Muriate—
Rotterdam, 20 cks.

Saltpetre—
Rotterdam, 200 bgs.
Hamburg, 46 cks.
Antwerp, 135 bgs.

EXPORTS OF CHEMICAL PRODUCTS

OF

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending December 23rd.

Acetic Acid—
Canterbury, 25 cs. £46
Acid—
Berbice, 7 crbys. £45
Alkali—
E. London, 15 c. £31
Natal, 10 6
Sydney, 1 t. 14 30
Singapore, 8 10
Ammonia—
New York, 4 cks. £17
Hong Kong, 5 cs. 12
Ammonium Carbonate—
B. Ayres, 15 c. £24
Melbourne, 5 8
Cologne, 1 t. 10 44
Ammonium Chloride—
Sydney, 10 c. £13
Ammonium Sulphate—
Canaria, 16 t. 2 c. £172
Hamburg, 250 11 2,698
Demerara, 20 4 225
Bordeaux, 10 100
Dusseldorf, 100 1,120
Las Palmas, 25 297
Cologne, 70 745
Arsenic—
Lyttleton, 12 c. £9
Bisulphite of Lime—
Oporto, 2 hds. £12
Bone Superphosphate—
Canaria, 3 t. 15 c. £20
Borax—
Melbourne, 20 c. £31
Monte Video, 4 cks. 32
Rio de Janeiro, 6 10
Copenhagen, 17 40
Carbolic Acid Crystals—
Genoa, 8 cs. £33
Yokohama, 2 t. 89
Hamburg, 113 cks. 741
Carbon Bisulphide—
Melbourne, 100 drs. £50
Carbonic Acid Gas—
Bermuda, 10 tubes. £30
Caustic Potash—
Lyttleton, 22 c. £44
Caustic Soda—
E. London, 3 c. £11
Terneuzen, 10 t. 3 110
Algoa Bay, 1 16 21
Auckland, 7 6
Napier, 5 3 60
Chemicals *(otherwise undescribed)*
Calcutta, 5 cks. £18
Bombay, 5 pks. 100
Huelva, 6 cs. 28
Cape Town, 4 c. 14
Melbourne, 8 11 86
Adelaide, 5 30
Sydney, 6 27 64
Bangkok, 6 131
Chemical Salts—
Hamburg, 13 c. £25
Citric Acid—
Melbourne, 2 t. 2 c. £313
Rotterdam, 4 ck. 2 kgs. 55
Libau, 1 156
Brussels, 5 4 184
Sydney, 2 1 146
Yokohama, 1 cs. 4
Barcelona, 10 75
Reval, 5 37
Hamburg, 6 14
Genoa, 15 126
Bombay, 1 8
Bilbao, 1 1 ck. 38
Coal Products—
Aniline Oil
Rotterdam, 14 drs. £500
Anthracene
Dusseldorf, 208 cks. £1,572
Benzol
Rotterdam, 33 pks 10 pns. 17 cks. £1,056
Coal Tar Dyes
Boston, 2 pks. £12
Naphtha—
Rotterdam, 99 rnlts. 62 pks. £750
Naphthaline
Rotterdam, 10 cks. £10
Paraffin Wax
Sydney, 35 bgs. £140
Pitch
Calcutta, 101 rnlts. £58
Dunkirk, 135 t. 236
La Rochelle, 1,155 2,020
Madras, 40 21
Tar
Calcutta, 850 rnlts. £464
Madras, 125 91
Tar Salts
Treport, 2 cks. £27
Toluol
Treport, 27 brls. 15 £113
Rotterdam, 18 205
Copper Sulphate—
Salonica, 7 t. 16 c. £115
Bordeaux, 5 2 71
Gibraltar, 1 2 17
Canterbury, 1 16
Rio de Janeiro, 9 11
Marseilles, 10 3 150
Paris, 5 2 83
Cream of Tartar—
Wellington, 1 t. 12 c. £147
Melbourne, 6 15 644
Sydney, 4 400
Fertilizers—
Cape Town, 124 t 19 c. £1,627
Guano—
Dominica, 16 t. 14 c. £165
Manure—
Canaria, 1 t. 10 c. £9
Jersey, 138 1 772
Oporto, 37 7 300
Melbourne, 1 5 18
Cherbourg, 94 11 846
Orotava, 15 150
Martinique, 54 11 190
Nevis, 20 220
Antigua, 25 260
St. Lucia, 38 1 395
Tarragona, 7 4 58
Carthagena, 37 296
Hamburg, 200 2,200
Mauritius, 71 7 450
Ostend, 666 bgs. 550
Ghent, 120 1,320
Dunkirk, 30 t. £330
Muriatic Acid—
Antwerp, 1 t. 17 c. £10
Strontium Nitrate Powder—
New York, 26 pks. £57
Phosphorus—
Dunedin, 10 cs. £63
Phosphate of Lime—
Oporto, 16 c. £12
Potash—
Oporto, 11 c. £10
Potash Salts—
Natal, 24 t. £3,092
Melbourne, 4 4 c. 424
Potassium Bichromate—
Oporto, 8 c. £16
Potassium Carbonate—
Bilbao, 4 cks. £38
Potassium Chlorate—
Philadelphia, 5 t. £245
Potassium Cyanide—
New York, 12 c. £63
Salammoniac—
Constantinople, 2 t. £64
Sydney, 11 c. 19
Salonica, 1 t. 5 50
Rotterdam, 17 12
Trebizonde, 10 19
Salicylic Acid—
Otago, 1 c. £29
Salt Cake—
Antwerp, 135 t. £236
Soda—
Natal, 2 c. £7
Brisbane, 6 8
Barcelona, 7 2
Soda Crystals—
Algoa Bay, 2 t. 2 c. £7
Sodium Arseniate—
Sydney, 1 t. 3 c. £12
Sodium Bicarbonate—
Sydney, 10 t. £68
Melbourne, 10 68
Townsville, 10 c. 4
Sodium Sulphate—
Ghent, 100 t. £150
Sulphuric Acid—
Madras, 25 cs. £19
Colombo, 1 t. 18 c. 24
Penang, 15 9
Melbourne, 11 9
Cape Town, 3 19 14
Superphosphate—
Treport, 20 t. £146
Superphosphate of Lime—
Las Palmas, 20 t. £98
Tartaric Acid—
Hamburg, 10 c. £58
Sydney, 30 cs. £175
Melbourne, 3 t. 416
Cape Town, 2 13
Reval, 5 30

LIVERPOOL.

Week ending December 22nd.

Albumen—
New York, 2 t. 15 c. £64
Alum Cake—
Dunedin, 4 t. 6 c. 2 q. £13
Ammonia—
Rouen, 3 c. 2 q. £16
Ammonium Carbonate—
New York, 12 t. 14 c. 3 q. £395
Genoa, 1 33
Ammonium Chloride—
Havre, 1 t. 1 c. £25
Philadelphia, 1 2 1 q. 30
Ammonium Sulphate—
Gd. Canary, 68 t. 11 c. £724
Valencia 81 10 3 q. 875
New York, 25 2 1 270
Nantes, 50 550
Antimony Regulus—
Gijon, 8 c. £28
Bleaching Powder—
Alexandria, 5 cks.
Baltimore, 204
Bombay, 39 8 cs.
Montreal, 19
St. Stephens, 33 kgs.
Boston, 491
Calcutta, 74
Corunna, 9 brls.
Melbourne, 31
Monte Video, 6
New York, 349
Philadelphia, 47
Piræus, 5
San Sebastian, 20
Borax—
Hamburg, 9 t. 16 c. £284
Rotterdam, 1 15 1 q 55
Syra, 7 2 11
Hamburg, 9 3 15
Adelaide, 10 15
Brimstone—
Christiania, 34 t. 19 c. £176
Boston, 10 4 508
Calcium Chloride—
Boston, 9 t. 19 c. £20
Caustic Soda—
Alicante, 5 dms.
Baltimore, 135 brls.
Barcelona, 175 10 60 cks.
Batavia, 7
Batoum, 200
Callao, 25
Constantinople, 8
Fiume, 45
Malaga, 140 15
Montreal, 100
Naples, 55
Odessa, 70
Pernambuco, 140
Piræus, 60
Progressa, 30
Rangoon, 4
Rosario, 20 10 kgs.
Wellington, 32
Sourabaya, 8
Sydney, 15
Tunis, 12
Vera Cruz, 100
Yokohama, 100
Alexandria, 50
Amsterdam, 20 40
Ancona, 45
Bari, 51
Bilbao, 86
Bombay, 36
Boston, 436
B. Ayres, 100
Calcutta, 177
Corinto, 40
Dunedin, 8
Leghorn, 50
Lisbon, 10
Madeira, 5
Madras, 53
Melbourne, 11
Messina, 35
New York, 400
Para, 6
Portland, Or., 120
Puerto Cabello, 25
Rio de Janeiro, 15
Seville, 351
Valencia, 25
Valparaiso, 33
Chemicals *(otherwise undescribed)*
Havre, 6 t. 4 c. 3 q. £246
Rotterdam, 10 1 15
Sydney, 10 15
Yokohama, 3 19 2 127
Antwerp, 5 7 3 177
Alexandria, 1 32
Marseilles, 3 2 5
Hamburg, 11 4 1 340
Lisbon, 15 26
Constantinople, 6 3 10
Citric Acid—
New York, 2 t. 10 c. £358
Copperas—
Constantinople, 2 t. 18 c. £6
Copper Sulphate—
Bombay, 6 t. £84
Calcutta, 5 70
Marseilles, 743 cks. 525
Bordeaux, 65 7 c. 1,069
Trieste, 17 9 238
Leghorn, 33 1 457
Epsom Salts—
Valparaiso, 1 ck.
Rio de Janeiro, 120 kgs.
Guano—
Malaga, 20 t. £200
Gypsum—
New York, 30 t. 5 c. £102
Oxalic Acid—
Rangoon, 2 c. £5
Brisbane, 1 t. 3 c. 2 q. 35
Phosphorus—
Shanghai, 10 cs. £62
Potassium Bichromate—
Rio de Janeiro, 8 c. 1 q. £14
Portland, Or., 7 3 11
Potassium Carbonate—
Rio de Janeiro, 10 c. 1 q. £11
Potassium Chlorate—
Leghorn, 1 t. 6 c. £62
Naples, 1 10 69
Hamburg, 1 62
Boston, 5 230
Yokohama, 21 996
Calcutta, 2 5 105
Genoa, 3 148
Naples, 10 23
Copenhagen, 4 204
Corunna, 10 25

New York, 10 532
Philadelphia, 5 240
Ancona, 1 5 60
Antwerp, 4 188
Hiogo, 17 10 797

Salammoniac—
Calcutta, 4 t. 10 c. £148
Constantinople, 10 3 q. 18

Salt—
Portland, Me., 100 t.
Rio de Janeiro, 1 1 c.
Sierra Leone, 102¼
Ghent, 50
Havannah, 40
Luango, 12
Amsterdam, 157
Antwerp, 100
Assinee, 5
Brisbane, 300
Calcutta, 2,604
Chicago, 260
Coquimbo, 200
Dunedin, 6
Faroe Islands, 82
Gothenburg, 321
Hamburg, 52
Lagos, 242
Newport News, 640
New York, 30
Para, 50

Saltcake—
Ghent, 50 t. £95
Baltimore, 154 11 c. 395

Saltpetre—
Bahia, 12 c. 3 q. £14

Soap—
St. Johns, N'fd., 100 bxs.
Saltpond, 18
Santiago de Cuba, 1 cs.
Shanghai, 3,250
Sierra Leone, 100
Trinidad, 1,400
Alexandria, 40
Christiania, 125
Genoa, 140
Hong Kong, 20
Las Palmas, 796
Portland, Me., 400
Santo Domingo, 50
Teneriffe, 783
Abonnema, 50
Accra, 200
Algoa Bay, 624
Axim, 50
Bluefield, 150
Bombay, 50 2
Calcutta, 1,104 4
Cavally, 40
Constantinople, 300
Drewin, 50
E. London, 1,000
Gibraltar, 180
Havana, 2
Honolulu, 1
Lagos, 12
Malta 78 3
Mossel Bay, 810
Pachuca, 12
Palma, 498
Port Natal 175

Soapstone—
Gr. Canary, 25 t. 10 c. £114

Soda Alkali—
Barcelona, 35 brls.
Odessa, 25
Seville, 66
Wellington, 20

Soda Ash—
Brisbane, 65 cks. 42 brls.
Constantinople, 50
Fiume, 10
Halifax, 30 tcs.
Hamilton, 98
Havana, 3
Hiogo, 100
Leghorn, 47
Madeira, 2
Madras, 24 bgs.
New Glasgow, 13
Philadelphia, 26 318 400 kgs.
Piræus, 20
Rio de Janeiro, 260
Rosario, 134
St. Stephens, 10
Salonica, 125
Santander, 16
Sherbrooke, 96 bgs.
Yokohama, 100
Baltimore, 500 400 800
Boston, 118 267 640
B. Ayres, 150
Callao, 48
Maceio, 15
New York, 688 1,134 1,200
Syra, 209

Soda Crystals—
Batavia, 25 cks.
Boston, 112 brls.
Constantinople, 84
Halifax, 68
Leghorn, 20
Pernambuco, 150 kgs.
Rosario, 34
Salonica, 10
Sourabaya, 167
Bombay, 20 kgs.
Monte Video, 50
Toronto, 75

Sodium Arseniate—
Rouen, 3 brls.

Sodium Biborate—
Petit Goave, 10 c. 3 q. £15

Sodium Bicarbonate—
Alexandretta, 10 kgs.
Antwerp, 15 5 cks.
Boston, 100 50
Brisbane, 250
B. Ayres, 50 119 225 brls.
Constantinople, 20
Dunedin, 100
Halifax, 225
Havana, 18
Leghorn, 50
Marseilles, 80
Montreal, 50 20
Nagasaki, 100
Naples, 100
Para, 6
Portland, Or., 150
Rouen, 100
St. Stephens, 100
Santander, 20
Stettin, 280
Truro, 100
Yokohama, 50

Sodium Bichromate—
Genoa, 11 c. £15

Sodium Carbonate—
Boston, 70 brls.
Rotterdam, 50

Sodium Chlorate—
New York, 10 c. £34

Sodium Nitrate—
Natal, 1 t. £9

Sodium Silicate—
Bombay, 5 cks.
B. Ayres, 38
Madeira, 10 brls.
Malaga, 6 7
Naples, 14
Rotterdam, 10
Rouen, 4

Sugar of Lead—
Rio de Janeiro, 5 c. 2 q. £8

Sulphur—
Trinidad, 1 t. £7
San Francisco, 24 10 c. 192

Zinc Chloride—
Bombay, 3 t. 5 c. 2 q. £50

HULL.

Week ending December 22nd.

Alkali—
Harlingen, 57 cks.

Bleaching Powder—
Venice, 25 cks.

Borax—
Antwerp, 5 cks.

Caustic Soda—
Antwerp, 10 dms.
Bari, 33
Catania, 45
Fiume, 55
Trieste, 28
Venice, 67

Chemicals (*otherwise undescribed*)
Antwerp, 23 cks. 20 cs.
Amsterdam, 21
Copenhagen, 12
Christiania, 2 504 slabs
Dunkirk, 1
Gothenburg, 287 22 701
Hamburg, 50 36
Harlingen, 20
Konigsburg, 3 8 btls.
New York, 100
Rotterdam, 1 46
Stettin, 2
Trieste, 8
Venice, 30

Cotton Seed Oil—
Bremen, 400 c.
Fiume. 448
Gothenburg, 100
Hamburg, 1,697
Rotterdam, 3,588
Stettin, 790
Trieste, 2,212

Dyestuffs (*otherwise undescribed*)
Antwerp, 1 ck.
Christiania, 230 bgs.
Hamburg, 3 dms. 148
Rouen, 1 1 cs.

Farina—
Rotterdam, 8 cks.

Linseed Oil—
Bremen, 4 c.
Christiania, 190
Drontheim, 21
Hamburg, 67
Hango, 147
Messina, 12
Rotterdam, 370

Manure—
Antwerp, 250 bgs.
Amsterdam, 480
Dunkirk, 784
Ghent. 180
Rotterdam, 300
Rouen, 250
Venice, 100

Painters' Colours—
Antwerp, 27 cks. 2 cs.
Bergen, 2
Copenhagen, 1 drm.
Dunkirk, 13
Ghent. 23
Gothenburg, 1
Hamburg, 10 4
Hango, 20
New York, 167
Reval, 3
Rotterdam, 13 1 25 pks.
Rouen, 3

Pitch—
Antwerp, 248 t.

Tar—
Rotterdam, 1 brl.

Varnish—
Antwerp, 1 css.
Christiania, 2 dms.
Gothenburg, 2
Hamburg, 3 cks.

TYNE.

Week ending December 24th.

Alkali—
Rotterdam, 172 c.
Antwerp, 51

Ammonium Carbonate—
Genoa, 16 c.

Barytes Carbonate—
Rotterdam. 240 c.

Bleaching Powder—
Genoa, 404 c.
Copenhagen, 853
Leghorn, 59
Naples, 55
Pasages, 748
Rotterdam, 1,264
Oporto, 143
Christiania, 304
Gothenburg, 102
Antwerp, 601
Bilbao, 115
Seville, 444

Calcined Magnesia—
Genoa, 8 c.

Caustic Soda—
Genoa, 945 c.
Gothenburg, 20
Seville, 1,716

Litharge—
Oporto, 9 c.
Gothenburg, 33

Magnesia—
Genoa, 95 c.
Odense, 1

Manure—
Leghorn, 1,601 c.

Oxalic Acid—
Horsens, 6 c.
Odense. 42

Potassium Chlorate—
Copenhagen, 21 c.

Soda—
Christiania, 286 c.
Gothenburg, 1,408 c.

Soda Crystals—
Nakskov, 89 c.

Sodium Silicate—
Genoa, 134 c.
Pasages, 104

Sodium Sulphate—
Oporto, 40 c.

Sulphur—
Rotterdam, 200 c.
Laurvig, 800
Christiania, 700
Gothenburg, 1,200

White Lead—
Copenhagen, 62 c.

GLASGOW.

Week ending December 29th.

Ammonium Sulphate—
Nantes, 30 t. 6¾ c. £314
Rouen, 8 3 83

Benzol—
Dieppe, 34 pns. 25 brls. £735

Bleaching Powder—
Newcastle, N.S.W., 200 c. £82
Calcutta, 25 t. 200

Coal Tar—
Calcutta, 11 t. £27

Cream of Tartar—
Bombay. 5¾ c. £24

Dyestuffs—
Logwood
Newcastle, 136¾ c. £75

Farina—
Rouen, 36¾ c. £36

Lead Nitrate—
Rouen, 45 c. £45

Litharge—
Bombay, 28¾ c. £20

Naphtha—
Rouen, 7 t. 5 c. £100

Painters' Colours—
Cape Colony, 28 c £25
New York, 1 t. 2¾ c. £25. 18s.

Paraffin Wax—
Odessa, 20 t. 10¾ c. £699

Pitch—
Antwerp, 102¼ t. £104
Dieppe, 209

Pitch Coal—
Calcutta, 22 t. ½ c. £56

Potassium Bichromate—
Gothenburg, 2 t. 8½ c. £65
Rouen, 362½ c. 316
Antwerp, 11 t 765½ c. £1,310

Potassium Iodide—
Bombay, 2 c. £55

Salt Cake—
Antwerp, 629 t. 1¾ c. £1,208

Soap—
Cape Colony, 2 t. 12 c. £72

Sodium Bichromate—
Bombay, 70¼ c. £37
Rouen, 5 t. 8 110

Sugar of Lead—
Bombay, 96 c. £82

Sulphuric Acid—
Cape Colony, 5 t. 5¼ c. £55
Colombo, 3 8 35
Madras, 80

White Lead—
Cape Colony, £112
Natal, 1 t. ½ c. £20. 5s.
Mauritius, 10¼ 137
Newcastle, N.S.W., 10 t. 224

GRIMSBY.

Week ending December 19th.

Chemicals (*otherwise undescribed*)
Antwerp, 5 cks.
Dieppe, 2 cs. 17 pks.
Hamburg, 2 6 16 dms. 4 btles.
Rotterdam, 17 8

Dyestuffs (*otherwise undescribed*)
Antwerp, 4 cks.

GOOLE.

Week ending December 16th.

Benzol—
Ghent, 20 dms.
Rotterdam, 43 cks.

Bleaching Powder—
Ghent, 15 cks.

Dyestuffs (*otherwise undescribed*)
Boulogne, 2 cks.
Ghent, 2 cs.

Manure—
Ghent, 169 bgs.
Rouen, 300

Naphtha—
Treport, 26 cks.

Pitch—
Antwerp, 150 t.

PRICES CURRENT.

WEDNESDAY, JANUARY 6, 1891.

PREPARED BY HIGGINBOTTOM AND CO., 116, PORTLAND STREET, MANCHESTER.

The values stated are F.O.R. at maker's works, or at usual ports of shipment in U.K. The price in different localities may vary.

	£	s.	d.
Acids:—			
Acetic, 25 % and 40 % .. .. per cwt.	7/- & 11/-		
,, Glacial .. .. ,,	51/-		
Arsenic, S.G., 2000° .. .. ,,	0	13	6
Fluoric .. .. per lb.	0	0	3¼
Muriatic (Tower Salts), 30° Tw. .. .. .. per bottle	0	0	10
,, (Cylinder), 30° Tw. .. .. ,,	0	3	0
Nitric 80° Tw. .. .. per lb.	0	0	2¼
Nitrous .. .. ,,	0	0	1¾
Oxalic .. .. nett ,,	0	0	3¼
Phosphoric, 1750° .. .. ,,	0	1	2
Picric .. .. ,,	0	0	10¼
Sulphuric (fuming 50 %) .. .. per ton	15	10	0
,, (monohydrate) .. .. ,,	5	10	0
,, (Pyrites, 168°) .. .. ,,	3	5	0
,, (,, 150°) .. .. ,,	1	5	0
,, (free from arsenic, 145°) .. .. .. ,,	1	7	6
Sulphurous (solution) .. .. ,,	2	15	0
Tannic (pure) .. .. per lb.	0	1	2
Tartaric .. .. ,,	0	1	1½
Arsenic, white powdered .. .. nett per ton	11	0	0
Alum (loose lump) .. .. ,,	5	5	0
Alumina Sulphate (pure) .. .. ,,	5	0	0
,, ,, (medium qualities) .. .. ,,	4	15	0
Aluminium .. .. per lb.	2s. 8d. to	0	3	2
Ammonia, ·880=28° .. .. per lb.	0	0	3
,, =24° .. .. ,,	0	0	1¾
,, Carbonate .. .. nett ,,	0	0	3½
,, Muriate .. .. per ton	21	0	0
,, ,, (sal-ammoniac) 1st & 2nd .. per cwt.	35/- & 33/-		
,, Nitrate .. .. per ton	40	0	0
,, Phosphate .. .. per lb.	0	0	10½
,, Sulphate (grey), London .. .. .. per ton	10	10	0
,, ,, (grey), Hull .. .. ,,	10	10	0
Aniline Oil (pure) .. .. per lb.	0	0	8¾
Aniline Salt ,, ... ,,	0	0	7¼
Antimony .. .. per ton	70	0	0
,, (tartar emetic) .. .. per lb.	0	1	0
,, (golden sulphide) .. .. ,,	0	0	10
Barium Chloride .. .. per ton	7	15	0
,, Carbonate (native) .. .. ,,	3	10	0
,, Sulphate (native levigated) .. . .. ,,	45/- to 75/-		
Bleaching Powder, 35 % .. .. nett ,,	7	10	0
,, Liquor, 7 % .. .. ,,	2	10	0
Bisulphide of Carbon .. .. ,,	11	15	0
Chromium Acetate (crystal .. .. per lb.	0	0	6
Calcium Chloride .. .. per ton	2	5	0
China Clay (at Runcorn) in bulk .. .. .. ,,	17/6 to 35/-		
Coal Tar Dyes:—			
Alizarine (artificial) 20 % .. .. per lb.	0	0	8¼
Magenta .. .. ,,	0	3	9
Coal Tar Products			
Anthracene, 30 % A, f.o.b. London .. per unit per cwt.	0	1	2½
Benzol, 90 % nominal .. .. .. per gallon	0	1	11
,, 50/90 ,, ... ,,	0	1	8
Carbolic Acid (crystallised 40°) .. .. .. per lb.	0	0	5½
,, (crude 60°) .. .. per gallon	0	1	2
Creosote (ordinary) .. .. ,,	0	0	1½
,, (filtered for Lucigen light) .. .. ,,	0	0	3
Crude Naphtha 30 % @ 120° C. .. .. .. ,,	0	1	3
Grease Oils, 22° Tw. .. .. per ton	2	5	0
Pitch, f.o.b. Liverpool or Garston .. .. .. ,,	1	14	0
Solvent Naphtha, 90 % at 160° .. .. .. per gallon	0	1	3
Coke-oven Oils (crude) .. .. ,,	0	0	3
Copper .. .. per ton	46	0	0
,, Sulphate .. .. ,,	14	15	0
,, Oxide (copper scales) .. .. ,,	45	0	0
Glycerine (crude) .. .. ,,	15	0	0
,, (distilled S.G. 1250°) .. .. ,,	51	10	0
Iodine .. .. nett, per oz.	0	0	9
Iron Sulphate (copperas) .. .. per ton	1	15	0
,, Sulphide (antimony slag) .. .. ,,	2	0	0
Lead (sheet) for cash .. .. ,,	12	12	6
,, Litharge Flake (ex ship) .. .. ,,	15	0	0
,, Acetate (white ,,) .. .. ,,	26	15	0
,, ,, (brown ,,) .. .. ,,	18	10	0
,, Carbonate (white lead) pure .. .. .. ,,	20	0	0
Nitrate .. .. ,,	20	10	0

	£	s.	d.
Lime, Acetate (brown) .. .. per ton	7	5	0
,, ,, (grey) .. .. ,,	10	5	0
Magnesium (ribbon and wire) .. .. per oz.	0	2	3
,, Chloride (ex ship) .. .. per ton	2	7	6
,, Carbonate .. .. per cwt.	1	17	6
,, Hydrate .. .. per ton.	17	0	0
,, Sulphate (Epsom Salts) .. .. .. per ton	3	0	0
Manganese, Sulphate .. .. ,,	17	15	0
,, Borate .. .. per cwt.	2	15	0
,, Ore, 70 % .. .. per ton	4	5	0
Methylated Spirit, 61° O.P. .. .. per gallon	0	2	6
Naphtha (Wood), Solvent .. .. ,,	0	4	5
,, ,, Miscible, 60° O.P. .. .. .. ,,	0	5	3
Oils:—			
Cotton-seed .. .. per ton	19	6	0
Linseed .. .. ,,	20	10	0
Lubricating, Scotch, 890°—895° .. .. .. ,,	7	5	0
Petroleum, Russian .. .. per gallon	0	0	4½
,, American .. .. ,,	0	0	5½
Potassium (metal) .. .. per oz.	0	3	10
,, Bichromate .. .. per lb.	0	0	3¾
,, Carbonate, 90% (ex ship) .. .. .. per ton	19	0	0
,, Chlorate .. .. per lb.	0	0	5½
,, Cyanide, 98% .. .. ,,	0	2	3
,, Hydrate (Caustic Potash) 80/85 % .. per ton	23	0	0
,, ,, (Caustic Potash) 75/80 % .. ,,	21	5	0
,, ,, (Caustic Potash) 70/75 % .. ,,	20	15	0
,, Nitrate (refined) .. .. per cwt.	1	2	6
,, Permanganate .. .. per cwt.	3	5	0
,, Prussiate Yellow .. .. per lb.	0	0	10¼
,, Sulphate, 90 % (ex ship) .. .. .. per ton	9	15	0
,, Muriate, 80 % (do.) .. .. .. ,,	7	17	6
Silver (metal) .. .. per oz.	0	3	7⅛
,, Nitrate .. .. ,,	0	2	10
Sodium (metal) .. .. per lb.	0	4	0
,, Carb. (refined Soda-ash) 48 % .. nett per ton	6	5	0
,, ,, (Caustic Soda-ash) 48 % . ,, ,,	5	5	0
,, ,, (Carb. Soda-ash) 48 % .. .. ,, ,,	5	7	6
,, ,, (Carb. Soda-ash) 58 % .. .. ,, ,,	6	7	6
,, ,, (Soda Crystals) .. .. .. ,, ,,	3	9	0
,, Acetate (ex-ship) .. .. ,,	18	10	0
,, Arseniate, 45 % .. .. ,,	10	15	0
,, Chlorate .. .. per lb.	0	0	7
,, Borate (Borax) .. .. nett, per ton.	28	10	0
,, Bichromate .. .. per lb.	0	0	2¾
,, Hydrate (77 % Caustic Soda) (f.o.b.) nett pr. ton (10 ton lots)	11	10	0
,, ,, (74 % Caustic Soda) ,, ,, ,, (10 ton lots)	11	5	0
,, ,, (70 % Caustic Soda) ,, ,, ,, (10 ton lots)	10	5	0
,, ,, (60 % Caustic Soda) .. ,, ,, (10 ton lots)	9	2	6
,, ,, (60 % Caustic Soda, cream) (f.o.b.) ,, (10 ton lots)	8	17	6
,, Bicarbonate .. .. ,,	6	15	0
,, Hyposulphite .. .. ,,	8	5	0
,, Manganate, 25% .. .. ,,	9	0	0
,, Nitrate (95 %) ex-ship Liverpool .. .. per cwt.	0	9	3
,, Nitrite, 98 % .. .. per ton	30	0	0
,, Phosphate .. .. ,,	16	10	0
,, Prussiate .. .. per lb.	0	0	8
,, Silicate (glass) .. .. per ton	5	7	6
,, ,, (liquid, 100° Tw.) .. .. ,,	4	7	6
,, Stannate, 40 % .. .. per cwt.	3	5	0
,, Sulphate (Salt-cake) .. .. per ton.	1	17	6
,, ,, (Glauber's Salts) .. .. ,,	1	15	0
,, Sulphide .. .. ,,	7	15	0
,, Sulphite .. .. ,,	6	10	0
Strontium Hydrate, 100% .. .. ,,	8	10	0
Sulphocyanide Ammonium, 95 % .. .. per, lb.	0	0	8
,, Barium, 95 % .. .. ,	0	0	5
,, Potassium .. .. ,	0	0	8½
Sulphur (Flowers) .. .. per ton.	10	0	0
,, (Roll Brimstone) .. .. ,,	8	0	0
,, Brimstone: Best Quality (nominal) .. ,,	6	10	0
Superphosphate of Lime (26 %) .. .. ,,	2	16	3
Tallow .. .. ,,	26	10	0
Tin (English Ingots) .. .. ,,	94	0	0
,, Crystals .. .. per lb.	0	0	6¾
Zinc (Spelter) .. .. per ton	22	12	6
,, Chloride (solution, 96° Tw.) .. .. ,,	6	15	0

THE

CHEMICAL TRADE JOURNAL

AND

OIL, PAINT and COLOUR REVIEW.

Publishing Offices: 32, *BLACKFRIARS STREET, MANCHESTER.*

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in ONE LOT as a GOING CONCERN.

WHEATLEY, KIRK, PRICE & GOULTY,

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l communications for the *Chemical Trade Journal* should be essed, and Cheques and Post Office Orders made payable to—

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de Advertisements, Announcements in the Directory Columns, and all Adver- nts not prepaid, are charged at the Tariff rates which will be forwarded on tion

A XIXTH CENTURY HOMILY.

"Blow your own trumpet, my brethren, for he that bloweth not his own trumpet, the same shall not be blown with a muchness.

—*Nashy Papers.*

WHEN trade ran in narrower grooves, and when the volume of business was done by fewer firms than is the case to-day, there might have been but little necessity for the trader to advertise his productions or his business. But the process of time has changed things somewhat, and in these days of cheap postage, telegraphs, telephones, and last but not least, good railway and water communication, business is transacted on quite different lines from what it was say even a quarter of a century ago.

The cry is now "keen competition," and those who still cling to the antiquated notions of their youth, rejecting the modern methods of doing business are sooner or later left behind in the race. The proof of this is to be found in the disappearance of many old established concerns, that were once thought as firmly established as mount Atlas itself, and also in the fact that the new blood infused into many firms of old standing has recognised ere too late, that a periodical announcement of their existence is necessary for the success of to-day.

There is no doubt that judicious advertising pays the investor. There are right ways, and wrong ones too, no doubt; but a judicious advertisement need not be considered *infra dig.* by any one who delights in that recreation called "trade."

It should be the aim of every *bonâ fide* Trade Journal to endeavour to increase the business of its advertisers. Many a hint, and many a kindly word may often be said in this direction to the advantage of all parties concerned, and when it is considered that the prosperity of the advertiser is bound up, so to speak, with his Trade Journal, the editor is bound to consider how he can be of service to his supporters. In our own case, we have well considered the position, and, as in each New Year since its establishment, the *Chemical Trade Journal* has run a Special Issue of most extensive circulation, we have come to the conclusion that a notice of the businesses of such of our advertisers as might choose to avail themselves of our pages, would not only be interesting to the many whom this special number will reach, but remain as a permanent directory for use afterwards.

A word here on a strange misconception that often possesses the minds of advertisers may not be out of place. Some people who have announcements to make, seem to fancy that the people they wish to reach are sitting waiting for that identical morsel of information. One swallow does not make a summer, neither will one advertisement make a business.

The value of a Special Issue lies in its extended circulation and in the efforts made to ensure its reaching every person likely to be interested in its contents. The *Chemical Trade Journal*, though sown broadcast, does not fall on stony

ground. Its ordinary issue circulates throughout every civilised country of the globe, and is recognised everywhere as *the* organ of the chemical trade. Such a circulation, throughout Great Britain, the United States of America, France, Germany, Belgium, Italy, Spain, Switzerland, Canada, Russia, Holland, Sweden, Turkey, Austria, Servia, Hungary, India, Ceylon, West Indies, Java, China, Japan, Australia, New Zealand, Fiji Islands, Brazil, Jamaica, Mexico, South Africa, etc., must certainly be regarded as a favourable medium for those who have anything to say to those countries.

It must not be supposed for one moment that our circulation is solely amongst actual manufacturers of chemicals. The user of chemical products and likewise the merchant, agent, and broker is perhaps more deeply interested than even the actual producer, and consequently the best known firms in the world are amongst our subscribers. Amongst the users who are our supporters may be mentioned the bleachers, dyers, and calico printers, paper makers, oil and tallow refiners, paint and varnish makers, brewers and distillers, tanners, soap makers, India-rubber manufacturers, sugar and starch manufacturers, oil cloth manufacturers, and many others, all of whom are finding, more and more, the necessity of keeping themselves *au courant* with such information as we weekly publish. The literary portion of the present issue has been largely increased for the purpose of allowing of the notices of our advertisers' businesses without curtailing the ordinary matter as it appears weekly, so that the Journal proper may be taken as a specimen number giving market reports, current prices of chemicals, imports and exports of chemicals, Gazette notices, and other information of use to buyers, sellers, and users of chemicals throughout the world.

It is not with any spirit of vain glory that we make these remarks. This Special Issue may perhaps go into places where the *Chemical Trade Journal* has not been heard of before, and as we are anxious to secure all the subscribers we can, in order to make the Journal of as International a character as is possible, we, like our advertisers, throw out our Sprat in the hope of catching the Mackerel.

THE LIVERPOOL MANURE TRADE IN 1891.

A SURVEY of the past year's business shows that, with the exception of nitrate of soda, values have materially declined all round. Several causes have been at work to bring this result about, such as the backward spring and consequent smaller consumption of manures than was anticipated, the unfavourable summer and autumn season for agriculturalists, the much smaller American demand for bones, and perhaps most of all the very abundant supplies of mineral phosphates from Florida put on the market. So that from the seller's point of view the course of business must have been unsatisfactory and almost uniformly disappointing. Mineral Phosphates: The most striking feature has been the heavy fall in value of high grade rock, occasioned by free selling and heavy shipments of 75/80% from Florida, so that at the close of the year this grade was actually selling cheaper than 55/60% from Carolina and Peace River. Early in the year sales of 75/80% Florida Land Rock were made at 12½d. per unit in cargoes c.i.f. to United Kingdom and Continent, subsequently higher prices being demanded, very little business was done until about May and June, when 12d. was freely accepted. Since then the price has steadily declined until at the end of December 9½d. has become full value, with sellers at the price. Shipments of high grade rock from Canada have been small, and since prices have of necessity had in the main to follow that for Florida, the business must have been unremunerative to raisers. A fair quantity of 60% Canadian has come forward, and this has been sold at 8d. down to 7½d. and 7d. per unit. Owing to the temporary dislocation of the raising and shipment, through litigation, of Bull River Rock, and to the comparati small new supply of River Rock from Florida, prices have been f well maintained. Anticipating large supplies of Florida River R buyers at the beginning of the year held off, but it soon became appa that those expectations would not be realised, and in February buyi Bull River commenced at 11d. per unit, c.i.f., and of Peace Rive 10½d. Up to June these prices were about maintained, but since values have gradually declined until at the close they cannot be qu over 10d. sellers, 9½d. buyers. Carolina Land Rock has for the part been taken by the United States, prices obtainable there h more than U.K. has been willing to pay. Belgian and the lower gr of Somme and Osso phosphates have been freely offered throug the year at easy prices. The higher grades of Somme have been tively dear, and shipments to U.K. have only been on a small s

Bones and Bone Meal: Shipments from Mediterranean and I have been on about a par with those of recent years, but owing to almost cessation of demand for the United States, the imports Europe from River Plate have been nearly doubled. As was inevita prices have fallen until bone has become once again one of the che forms of manure. The year opened with sellers of River Plate ca of bones at £5., but by the end of January £4. 16s. 3d. had accepted. In April £4. 15s. became the price, and in May a business was done at this figure. In July £4. 12s. 6d. was accep and since then the value has gradually declined to £4. 7s. 6d. £4. 5s., £4. 7s. 6d. being full closing value. Similarly, East I Crushed Bones and Bone Meal have come down, opening at £5. 6d. and closing at about £4. 10s. per ton on spot; 2s. 6d. to 5s. ton more for shipment. Good clean parcels of Brazil and Charrisey Bones have been selling all the time at £4. 10s. to £4 ex-quay Liverpool, only occassionally falling to £4. 7s. 6d.

Nitrate of Soda has been the exception among the manure mate owing to exceptional conditions. Owing to the unprecedentedly l shipments in the later months of 1890, the price had fallen to 7s. per cwt., and it looked as though a still lower level would be reac when in January last year the Civil War in Chili broke out. immediate effect of this was an advance in price, which continued u in March, 9s. 6d. was touched. Notwithstanding the much red shipments in January, it became apparent in April that supplies w be ample, and from that time prices eased off, until in June 8s. 6d. again been reached. The collapse of the war would probably have to a repetition of the previous year's heavy shipments and dro prices, but the almost coincident effective combination of produce restrict shipments put new life into the market, and by the en August 8s. 9d. was the spot price. 9s. was reached in October, 9s. 3d. by the end of the year. The further policy of the shipper six months past in holding any but their near cargoes has put speculative operation almost out of the question, and at the pre moment the market stands on its merits free from speculative dist ance. At the close, spot value and that of due cargoes is 9s. October and November shipments are worth 9s. 4½d. to 9s. 6d., December about 9s. 4½d. Visible supply for Europe ending Dec ber stands at 550,000 tons, against 712,000 tons ending 1890, so if the consumption between this and end of April equals that same period in 1890, the available supply at the end of April n necessarily be reduced to very narrow dimensions, and spot price still further advanced. Sulphate of Ammonia has been relatively ch throughout the year, and it closes quite the cheapest form of ammo to be had. Opening in January at about £10. 5s. free rails, advancing 10s. to 12s. 6d. in March and April, it, with comparati unimportant fluctuations, settled down until, at the middle of De ber, £9. 15s. was reached. At the close of December, however advance of about 5s. had been scored, and the outlook points to a further considerable advance.

Other nitrogenous material: Owing to the comparatively n cheaper sulphate of ammonia and nitrate of soda, and the tendenc use these articles for mixing purposes and in conjunction with su guanos seem to be falling into disuse. Liebigs guanos have mostly to Continent at higher prices than U.K. would pay. H prepared fish guanos have been offering freely at 8s. 6d. to 9s. unit of ammonia, and 1s. to 1s. 1d. for phosphates, which prices

much inducement to import, and, consequently, imports have small. Ground hoof has found a ready sale at 8s. 9d. to b shipping port, but mainly for export. Imports of Dried e been small, and have been sold at 9s. 3d. down to 8s. 9d., being closing value. Home prepared Dried Blood has met a nd, prices alternating between 9s. and 9s. 6d. f.o.r. at works, close of the year the market was weak, and value not over it of ammonia.

W PROCESS FOR THE RECOVERY OF AMMONIA DURING GALVANIZING.

CESS of great interest to galvanizers, and which must ber or later affect the producers of sal-ammoniac and muriate ia, has just received a satisfactory practical trial at the works Iverhampton Galvanizing Co., at Wolverhampton.

been known for years that only a small proportion of the ammonia employed in the foregoing industry is practically being imagined that the remainder was lost by volatilization. mained, however, for Messrs. Saunders and Saunders, the ring chemists of Cleckheaton, Yorkshire, to discover that mallier portion of the ammonium chloride is, strictly speaking, , the major portion being evolved as free ammonia.

he foregoing discovery they have founded a process for the of the ammonia evolved during the process of galvanizing, y have patented. Briefly described the process is as follows:— nizing pots containing the molten spelter, and on the surface muriate of ammonia is occasionally sprinkled, are surmounted and these are connected with a tall scrubber, down which an on is made to flow. A Blackman air propeller is placed at the tower, which causes the fumes from the pot to pass into and from thence into the tower; during the passage of these ugh the tower they become absorbed and dissolved. The on is pumped over and over again through the tower, until it l nearly neutral to test papers, when it is taken away and l, fresh acid being employed in the tower. Roughly 60 per e ammonia is in the free state, the remainder being volatilized

aw the process at work it was simplicity itself; a sharp lad age the whole plant for an installation of any magnitude, and f recovered muriate or snowy whiteness testified to the fact mense saving must attend the use of the process.

, this process collects the ammonia hitherto lost by the and returns it to him ready to be used again. The value of l product (with a recovery of only 50%) amounts to upwards o., the whole of which has up to now been totally lost to the

'ACTURE OF IRON FREE SULPHATE OF ALUMINA.

SPECIALLY CONTRIBUTED.

resent article we propose giving a detailed description of the cal principles involved in the different processes which have ested for the elimination of iron from crude sulphate of iquors, in the manufacture of the sulphate of alumina of ; and also, to point out as far as possible, those processes e stood the test of manufacturing practice. Sulphate of e from iron is an important commercial product, commanding a ready sale in virtue of the fact that it contains a greater of anhydrous sulphate of alumina than is found in the otash and ammonia alums. It is easily soluble in water, s as readily as the more neutral alums, and as it is now made uantities, quite as free from iron it bids fair in course of irely displace these salts in certain industries. For sizing in ing, and in special cases for mordanting in dyeing, pure alumina is the most economical aluminous material known. practically one-third more $Al_2 3(SO_4)$ than the ordinary rock alums, and is cheaper in the same ratio, as it is substantially the same price weight for weight as these salts. The importance of the manufacture to the Chemical Trade is therefore undoubted. In recent years it has made rapid strides. Indeed there are a multitude of interesting processes in active operation to-day in different countries of Europe and in America, producing a product more or less free from iron, which are the outcome of patient and laborious research, and of the keen observance of the behaviour of the reagents, whose properties were until recently little understood to be capable of technical application.

Although crystals of sulphate of alumina separate from concentrated solutions of the salt, having the definite composition $Al_2 3(SO_4)$ $18\ H_2O$, yet these crystals are too soft to be easily removed from the mother liquor. Unlike the alums in this respect, no crystallization process for obtaining it free from iron is likely to succeed. The crystals readily melt in their water of crystallization, and are very soluble in water. If heated to a moderately high temperature the greater part of the combined water is driven off, leaving a white amorphous powder more or less soluble in water. When strongly ignited it is almost wholly decomposed, leaving behind nearly pure anhydrous Al_2O_3. This ignition method has been suggested as a means of obtaining pure Al_2O_3, but the temperature of dissociation is too high for it to be of any practical value.

The raw materials employed in the manufacture of the pure salt are either the mineral called Bauxite, or alum clay and sulphuric acid. Sometimes China clay is used instead of Bauxite for obvious reasons, viz.: It contains less iron per unit of soluble alumina than either Bauxite or alum clay. The Bauxite or alum clay is dried in a kiln and freely ground before being used, whilst China clay is calcined at a higher temperature to expel the 10 per cent. or so of water in combination with the silicate of alumina, and then subjected to the same treatment of grinding and sieving. China clay is more suitable than Bauxite for certain processes, mainly because of the comparatively smaller quantity of iron it contains. Bauxite is a native hydrate of alumina found extensively in Ireland and France. In the latter country it is found in the commune of Baux, from whence it takes its name. The Irish variety when dried and ground contains about 52% Al_2O_3, all of which is practically soluble in sulphuric acid, and about 25 per cent. of combined water. China clay, on the other hand, is a pure silicate of alumina with more or less free silica. The quality most suitable for making sulphate of alumina should be as free from iron as possible consistent with the price. The iron which exists as ferrous silicate varies in amount from two-tenths per cent. to 1 per cent., whilst the alumina ranges from 35 to 42%. During the calcining of the clay the ferrous silicate is decomposed, the whole of the iron being converted into the ferric state. This almost wholly passes into solution when the calcined clay is subjected to the action of the sulphuric acid. Of the Al_2O_3, seldom more than 80% passes into solution as sulphate.

The conversion of the alumina in Bauxite into sulphate is a simple operation. The ground mineral is gradually added to oil of vitriol contained in a circular lead-lined tank provided with a revolving agitator in the proportion of 46 parts first quality Bauxite to 100 parts o.v. of 123° Twaddell (70% H_2SO_4), the acid being previously diluted to about 100° Twaddell, and slightly heated by injected steam. When once the chemical action begins it rapidly assumes formidable proportions owing to the amount of heat evolved. The number of calories given out during their action being $20,990 \times 3 = 62,970$ (Al_2O_3, $y\ H_2O$, $3(SO_4)$ Aq. Naumaun.) The mass swells and rises almost to the top of the vessel. Cold water has frequently to be added to allay the violence of the reaction. When this is going on an oxidising agent such as nitric acid or nitrate of soda is added to the mixture in sufficient quantity to oxidise all the ferrous oxide. Water is finally added, and as nearly all the purifying processes demand that the solution be neutral, *i.e.*, that no acid should exist in it over and above that required to form $Al_2 3(SO_4)$, ground chalk made into a milk with water is added to the liquor to render it slightly basic (to tropæline). The crude muddy liquor is now allowed to remain at rest in large settlers till the suspended matter has subsided. The clear liquor, of a slightly yellowish tint, should show a gravity of from 35 to 40° Twaddel tested cold. It is then ready for the purification process.

China clay may be dissolved in a similar way, but it takes a longe time as the action is not so energetic. A tolerably large excess of clay is used in order to saturate all the sulphuric acid. The proportion of calcined finely ground and sifted clay to acid is proportionately greater—62 parts clay to 100 parts O.V. (70% H_2SO_4). The strength of the acid actually employed is about 100° Twaddell, and as in the foregoing case, a very small quantity of a nitrate is added to be perfectly sure all the iron exists in the ferric state. The mixture is kept as hot as possible for a considerable time to ensure the complete saturation of the acid, after which it is diluted with water as before, and the sedimentary matter settled out. The following analyses show the composition of crude sulphate of alumina liquors made in this way from Bauxite and Cornish china clays :—

	Bauxite Liquor. Grammes per litre.	China Clay Liquors. Grammes per litre.	
		No. 1.	No. 2.
Alumina Al_2O_3	48·30	37·20	28·99
Combined SO_3	112·58	86·80	67·65
$Al_2 3(SO_4)$	160·84	124·00	96·64
Free Acid H_2SO_4	1·48	1·176	11·76
Ferric oxide Fe_2O_3	2·06	0·136	0·56
Sp. Gr. at 60° Fah.	1·150	1·120	1·120

The earliest attempt to purify the liquors from iron was recorded in 1837 by Weissmann, who in that year obtained a patent in this country for removing the iron with yellow prussiate of potash (K_4 Fe Cy_6). The process does not appear to have been a success, owing doubtless to the difficulty of obtaining the liquors free from ferrocyanide and the Prussian blue which was formed. Although other inventors followed rapidly in Weissmann's train with the same application, they failed to establish a satisfactory process. Indeed, it was not till forty years later that this was done. In 1879, Mr. J. W. Kynaston saw clearly that if ferrocyanide was to be used means must be provided to remove the excess required, and also to remove the last traces of Prussian blue, which discoloured the otherwise perfectly clear liquor. Unless this could be efficiently effected the liquors would not be entirely free from iron because the precipitant (K_4 Fe Cy_6) contained iron itself; and beside the solid product, which might only contain a trace of iron, would still be unsaleable owing to its colour. Since 1879 when Mr. Kynaston so adequately placed the use of ferrocyanides on a successful basis, many investigators have worked with a view to obtain other reagents for separating the iron, and none more carefully and laboriously than Kynaston himself, who is the originator of the best and most successful processes.

(To be continued.)

THE MANUFACTURE OF CHROMIUM PIGMENTS.

1. PIGMENTS CONTAINING CHROMIC ACID.—For the preparation of lead chromates, both soluble and insoluble, lead salts are employed, but while the latter are much cheaper to use, it is universally admitted that the best chrome yellows are to be prepared from the acetate, no other salt giving such a large variety of shades as well as other desirable physical properties. The lead acetate is preferable made, says *Dingler's Polyt. Jour.*, from litharge in a lead-lined hemisperical iron pan fitted with a steam pipe passing to the bottom; in this is placed about half the necessary amount of acetic acid of 30 per cent. strength (6° B.), the pan being of such a size that it is about one-third filled. The liquid is then heated to the boiling point, and the litharge, which has been previously reduced by grinding under edge-runners with water to a fine cream, is run in through a fine sieve with constant stirring. Steam is again turned on for a few minutes, and when the liquid begins to boil, solution rapidly takes place. To convert the basic salt into the neutral acetate the remainder of the acid is added gradually until a few drops of the liquid no longer gives a precipitate with a 5 per cent. solution of mercuric chloride.

Basic lead acetate, $Pb(C_2H_3O_2)_2$,—2 $Pb(HO)_2$, has been recognised for a long time as the best source of chrome oranges, a experiments have shown (in spite of certain difficulties in the facture of other chromes varying in shade from the softest lemo deepest scarlet) that neither in cost nor in beauty of sha it be beaten by any other lead salt. It is prepared in the pre described pan, which for this purpose should hold about 300 li taking 76 kilos. of 30 per cent. acetic acid and heating to ab the admission of steam being so regulated that the temp remains above 70°C. 120 kilos. of litharge are then added in t of a cream as in the preparation of the neutral salt, a stiff brus constantly worked about in the sieve to hasten the process. W the litharge is passed through, the sieve is washed out with hot the brush being used all the time. The success of the op depends largely on the speed of addition of the litharge and fineness of the sieve, which should not be less than No. 120, an care must be taken that none of the cream is poured directly i acid, as in this case, hard lumps are formed which fall to the and escape the action. Thorough stirring must also be kept who'e time, until the mass is seen to thicken and to change in to a pure white; should it then prove too thick for further ma tion, more hot water is added, but the addition of much whether hot or cold, is to be avoided, as it retards the action. the reaction is complete the pan is covered with a wooden allowed to stand twelve hours. It should then form a very har mass, in which no lumps and unchanged litharge are visible.

For conversion into chromate the basic acetate need not be di in water, suspension being sufficient, and this may be attai working it through a fine sieve by the aid of a brush as pre described, but seeing that the amount of metallic lead which is in all commercial litharge is apt to spoil the shade of the chrom better to run it through an ordinary paint mill, when the free l be found to remain in the grooves of the stones, and can e removed at the end of the operation. It is advisable to set up in such a position that the cream after grinding can run direct i precipitating tank.

The litharge employed for the manufacture of either normal acetate must be as pure as possible, the presence of small am copper being extremely prejudicial. To test for copper 10 grms litharge should be treated in a beaker with 20 cc. of ammo which a few drops of nitric acid have been added; after th stirring the whole is allowed to rest for six hours and filtered filtrate is acidified with acetic acid and a few drops of a 10 p solution of potassium ferrocyanide added, if anything more slight brown colour is noticeable the sample must be reject great importance also is the physical condition of the litharge. all cases a laboratory experiment in the case of conversion i basic acetate should be tried before the substance is used on t scale

A.—THE CHEMISTRY OF LEAD CHROMATES.

Normal lead chromate, formed by the decomposition of lead by potassium bichromate, although possessing when freshly pitated a very brilliant sulphur-yellow colour, is rarely emplo commerce except for the production of green lead glass. The of this lies in the fact that during the prolonged washing neces free it from acid, its colour is liable to alter to an orange yellow will not bear dilution without giving very unpleasant and dirty The exact cause of this change has yet to be explained, but it probable that it is due to a crystallisation of the chromate. I even possible to prevent it with certainty, but it is advisable t with at least 5% excess of lead, to use the solutions as dilute a as possible, and to keep stirring during and for some time af precipitation. Yellows of similar chemical composition sho different shades, according to the amount of the excess of lead during the precipitation, being the more brilliant in colour the the excess. If the precipitation takes place in the presence of s sodium carbonate to neutralise the whole or greater part of the acid, the resulting chrome shows much less tendency to change American "chrome yellow for the production of chrome gr pigment which, owing to the peculiarity of shade is unsaleabl yellow, but is better adapted for mixing with Prussian blues th

ne, owes its non-liability to change to the large excess of
it during precipitation as well as to the neutrality of the
In this case the absence of free acid is attained by adding
crystallised tartaric acid to ten of the chromate in con-
olution, the result being a mixture of the normal salt with
chromate.

ment of chrome yellows with caustic or carbonated alkali
nverted into oranges, which can be made of as red a shade
by the employment of a sufficiently concentrated solution,
te amount of alkali added not having any relation to the
olour.

e lemon chromes having the general formula $PbCrO_4$, $PbSO_4$
ades of chrome orange can be prepared by the action of
la without loss of chromic acid, the less sulphate in the
bstance, the yellower being the shade of the resulting orange.
orange so prepared, though slightly more expensive than
as before described, possesses an exceptionally fine colour
degree of density.

ible lead salts may be replaced as a source of chrome yellows
aper insoluble compounds, such as white lead, basic chloride,
ecially prepared sulphate, the ordinary sulphate of commerce
lly too impure for the purpose. The action of the normal
romates on white lead is to produce yellows of such a bad
o be useless, but good results are obtained by converting a
tity of it into either acetate or nitrate by the addition of
ive acid; on the addition of the precipitating mixture the
tion is attacked and part of the original acid set free, this
ceeding until the whole of the white lead is converted into
A portion of the liberated acid is neutralized by the alkali
romate, and in the production of pale yellows care must be
ld in the first place enough acid to combine with the whole
tal of the chromate employed, lest the shade should be
y the action of the free alkali. The sulphuric acid
recipitation must not be taken into account in this cal-
If the basic chloride of lead is used instead of white lead,
process is employed. Sulphate of lead prepared from the
te is admirably adapted for the production of certain shades
but it should not be dried, but employed in the form of a
great care must be taken to keep it in excess during the
Should the shade of the chrome not be dark enough, a small
f soda should be made to one of the wash waters.

(*To be continued.*)

SOCIETY OF CHEMICAL INDUSTRY.

LONDON SECTION.

rst meeting in the new year was held by this section on
day, January 4th, Mr. T. Tyrer in the chair. The Chairman
l made an announcement of the regretted death of Mr.
the late secretary of the Section, and a vote of condolence
amily having been passed, called upon Mr. Boverton Red-
is paper on "Galician petroleum." Mr. Redwood traced the
f some primitive forms of petroleum industry back to the
of the seventeenth century, when its use was restricted to
acture of cart grease and medicaments. He stated that
was not mentioned in the Austrian mining laws promulgated
of the eighteenth century, but that a record appeared to the
about 1810 a process of refinement was carried out, and the
old for 35 florins per cwt. The modern method of distilling
ards refining the oil was due to the chance observation of
of cart grease named Schriener, aided by the advice of a
gist, who appears to have acted as consulting chemist to the
. Mr. Redwood commented on the fact that the sources of
showed an intimate connection in point of direction with the
ntain ranges, at least in Europe, and illustrated the tilting of
and the consequent difficulties in boring that sometimes
means of three superposed leather straps. The density of
rude petroleum from drilled wells ranged from about ·830 to
. Two methods of drilling wells were in use, the first being
of hand drilling, in which the drill proper was lowered
ittle of the bottom, and suddenly released by the removal o
a detent which permitted it to fall freely through a small stroke, while in the second the rope (in the American system) and the string of wooden rods (as in the Canadian system) was released, and allowed the drill to deliver its blow. The wells were cased by means of iron tubes screwed together and forced downwards after the passage of the drill. The result of the improved methods of obtaining the oil was that its price had sunk to 8s. 7d. per barrel, in spite of which there was still much importation. The industry was protected by a heavy import duty on refined petroleum, to evade which it was customary to import refined Russian oil, to which a small quantity of crude petroleum had been added to justify its declaration as crude. A second Galician industry intimately related to the obtaining of petroleum was that of mining for ozokerite. The industry was in the hands of a number of small proprietors, who worked in a very primitive manner, and deaths from the inrush of semi-fluid ozokerite and from the explosion of inflammable gases were frequent. The chief portion of the trade in ozokerite in England was in the hands of Messrs. J. C. and J. Field, the well-known soap and candle makers, and it was owing to the kindness of Mr. Leopold Field that the many interesting samples exhibited were shown. The method of refinement practised consisted of distillation by means of super heated steam, whereby about 80% of hard white ozokerite, fit for making candles, was obtained.

In the discussion which followed, Mr. Topley disputed some of Mr. Redwood's opinions concerning the connection between petroleum deposits and adjacent mountain ranges, but agreed with his conclusions in the main. Mr. Nelson Boyd gave an interesting description of further details of the method of drilling in vogue in America and Canada.

Mr. W. J. A. Butterfield, touching upon a remark of the author's to the effect that one of the most potent causes of interest in the production of petroleum nowadays was its utilisation for enriching coal gas and water gas, stated that one of the chief difficulties in the use of certain samples of petroleum for these purposes arose from the water they contained, and asked whether Galician petroleum was free from this defect; another requirement of the user of petroleum for gas making was that it should be free as far as possible from sulphur and ammonia. He further inquired whether the same relation between oil fields and mountain ranges held in America as it appeared to do in Europe.

Mr. Redwood, in reply, agreed with Mr. Topley that the coincidence of direction of petroleum fields and mountain ranges was far from absolute; he defended his use of the terms Canadian and American as applied to drilling machinery which Mr. Boyd had criticised. In reply to Mr. Butterfield, he said that samples of petroleum having a specific gravity below ·900 seldom gave trouble in the separation of water from them. Galician petroleum was practically free from sulphur and ammonia. The paper was admirably illustrated by a collection of petroleum products and models of plant.

MANCHESTER SECTION.

THE first meeting of this year was held last Friday week, January 8th. The chair was taken by I. Levinstein, Esq, shortly after 7 p m. In the absence of Mr. J. Carter Bell through illness, Mr. Fisher officiated as secretary. After passing the minutes, the chairman called attention to the bye-laws of the Corporation of 1890 and 1891 in reference to their bearing on chemical manufacturers, and the erection of temporary plants. As some of the restrictions pointed out by the chairman would, if enforced, very seriously affect chemical manufacturers, it was decided to postpone the question, and to bring it up for discussion at the next meeting.

The discussion on the papers of Messrs. Barrow and Grimshaw, adjourned from the last meeting, was then resumed. The various questions asked by Messrs. Dreyfus, G. E. Davis, Dr. Gerland and others were briefly answered by Mr. Barrow, and then Mr. Grimshaw replied to several questions which had been raised at the previous meeting after the reading of the papers. A short discussion followed, after which a paper by Mr. Thomson on an apparatus for registering the density, and duration of the emission of black smoke from chimneys was read by Mr. Wilde. In the absence of Mr. Thomson the discussion was adjourned, and the meeting terminated. There were about forty members present.

MAKING CAUSTIC SODA AND CHLORINE BY ELECTROLYSIS.

RECENTLY a private trial of a new process for the electrolytic decomposition of salt was made at the works of Messrs. Bowes, Scott, and Western, Battersea. The process is the invention of Mr. Greenwood, the really new feature in the invention being the construction of the anode which is compounded being formed of carbon plates, with a metal core to increase the conductivity, and treated in such a manner as to render it non-porous and unattackable by the nascent chlorine evolved on its surface.

The instalment used for the experiment at Battersea consisted of five large electrolytic vessels, and in commencing to work, these are charged with a solution of common salt through which a current of electricity is then passed, thus splitting up the salt into its elements chlorine and sodium. The chlorine gas is collected and led into milk of lime, whilst the sodium combines with the water to form a weak caustic lye. The liquid is kept circulating through the series of electrolysers until the chlorine is worked off. The lye contains about 5% of Na_2O, whilst the bleaching liquor is of the usual strength containing about 7 per cent. of available chlorine. It is stated that this process is not so much intended to produce solid caustic soda, as alkaline lyes for the use of paper makers, soap boilers, etc.

The process is really a resuscitation of the process which was tried and failed about fourteen montes ago.

As to the scientific success of the process, it certainly seems more successful than the former attempts in the same direction, but as regards the prospects of financial success, it would be hazardous in the extreme to venture an opinion at present. There does not appear to be any startling departure, or radical change in the process as it stands, and the experience of the past in connection with the financial working of what was seemingly a most promising process, does not unfortunately augur well for the future. Nevertheless, *ne cede malis*, and if there is anything of merit in this new process it is to be hoped that the same may be given a fair chance to assert itself.

Our Book Shelf.

THE CHEMISTRY OF PAINTS. Published by Harrison Bros and Co., Philadelphia. 41 p., 11 illustrations. 1891.

This little *brochure*, which is neatly got up, is virtually a description of the works of Messrs. Harrison Bros. and Co., to which is appended a short treatise on painting. After describing the chemical plant, including the plant for making vitriol and alum, the production of the various colours manufactured is described, including several kinds of vermillions and chromium compounds, such as yellows, greens, &c.

Adulteration has not been overlooked, but the chief attention has been given to white lead manufacture.

After this comes an interesting account of the levigating, grinding, and mixing machinery.

Having thus briefly describing the production of the pigments, the preparation of the paint itself is gone into, which naturally includes the treatment of oils and driers, &c. Then follow some good hints upon the use and application of paint.

The little work is illustrated throughout with coloured plates of houses, showing the various colours and shades which have been employed in painting the same, all of which are good, and some very tasty. We should strongly advise all those connected with the oil, paint, and colour industry to write for a copy of this little book, not only on account of its intrinsic value, but also as an indication of the way these things are done in the New Country.

THE METALLURGY OF ARGENTIFEROUS LEAD. By M. Eissler, 332 p., 183 illustrations. Appendix and Index. London: Crosby, Lockwood, and Son. 1891.

There has long been a need for some work devoted specially to this subject. In all text books of metallurgy there is so much of importance to claim the attention that the aspect of lead as a source of silver, and the particular methods employed for obtaining the same only be considered as secondary matters.

The work in question is truly as the author states at the outset—confined to the treatment of argentiferous lead from a silver produ point of view. The author has wisely left the other parts of metallurgy of lead, and kept to the purpose with which he started.

The main object of the book is to describe in full the methods wh have been developed since the inception of this industry in America 1869; and thereby to afford information for the better establishm of this industry in other isolated districts, rather than for the furt assistance of those who have attained a state of civilisation so to spe On this account the reverberatory furnace process, prevalent England and on the Continent, has not been so fully dealt with, as blast furnace system, which is virtually the only one applicable in smelting districts, and which, after a short introduction to the sour and properties of lead ores, is fully treated in chapters 3 to 8 inclusi chapter 5 being devoted to water jacket furnaces. Before leaving general principles of smelting, there is a chapter devoted to various methods of condensing the fumes from the furnaces, a subj which is of vital importance, where antimonial or arsenical ores treated, when the question becomes not only a financial one bu sanitary problem of great importance. Some eight or ten differ condensors are described, including dry condensors, those in wh washing with water is resorted to, and one in particular in which electrical discharge of high potential is employed.

Chapter X. opens the subject of desilvering the worked lead, and devoted to various methods of cupellation. The next chapter is a l and interesting one, consisting of a detailed account of the various fining processes now in use, whether by the agency of zinc, ste super-heated steam crystallisation (as in Pattison's process), or elect lipes by Keith's process. Chapter XII., which concludes the wo treats of the assaying of the ores, slags and refined lead, &c. In analysis of the lead preference is given to volumetric methods, whic in keeping with the idea of the work; but the way in which methods are described is rather scanty, and in those districts where is not easy to get at other works on metallurgy, the meagreness of t portion will most likely be felt keenly.

The appendix of 58 pages forms a very fitting and useful conclus to a work which not only will be found a valuable addition to library of the practical smelter and metallurgist, but also a *sine qua* to pioneers.

THE PRINCIPLES OF CHEMISTRY. By D. Mendeléeff. Transla by G. Kamensky, A.R.S.M. Edited by A. J. Greenway, F.I. Two vols.; 1,073 pp, with appendix and index. Londo Longman's, Green and Co., 1891.

The publication of this excellent work in the English language w afford to many a most valuable addition to the Chemical literature the present day, and apologies are made by the translator for occurrence of any inelegance of language, because it was held m important to reproduce the exact shade of meaning conveyed by author, than to sacrifice the same to obtain flowing language. T work is printed in two types, the student being intended to master large type first. But the matter is of such an interesting nature t the student will find it hard at times to keep himself to the large ty alone. The author's object is to enable students to grasp the princip of Chemistry in analytical and theoretical work, in the hope of inspir students to then commence to study in order to advance the science Chemistry. At the same time by inviting students to fit themselves assist in raising the "edifice of science," he considers that he is laying the foundation for the training of practical men, who a thorough training shall be fitted to pass from "platonic aspirations classical verbosity to enter the regions of actual labour for the comm weal.'

That Chemistry is at one and at the same time a means and en not overlooked however, and the author deals very happily with relation of technological Chemistry to pure science.

Volume I.—After an introduction, in which chemical and phys forces are introduced to the student, and also an excellent definit of the exact change experienced by matter in passing from elementary state to one of chemical combination, Chapter

iences with water, in which crystallization and solution are also dered.

is necessary that we should here state that the arrangement of the is throughout based on the periodic law enunciated by the r, a subject which is fully dealt with in the preface.

e composition of water and the preparation &c. of hydrogen gas itutes Chapter II. Following this comes oxygen and its saline ounds, which includes the oxides and hydroxides of the alkalis ther metals.

ceeding oxygen is ozone with hydrogen peroxide. This chapter important one to the student, the complexity of the ozone mole- leading up to Dalton's atomic theory, which is ably treated. ter V. is on nitrogen and air, the analysis of air and, the effect of ical discharge on the same, being the most prominent portions of apter.

e compounds of nitrogen with hydrogen and oxygen, starting ammonia, its preparation and manufacture, makes an interesting mportant chapter, as it covers the oxide of nitrogen and the facture of nitric acid. Here, perhaps, the student will find he assed his bounds, and gone into the small type to learn more action of nitric oxide in the manufacture of sulphuric acid, for the ation to do so is very great. After the oxides of nitrogen, the facture of sulphuric acid is very fittingly described, the chapter g with an account of the liquefaction of nitrous oxide.

w the student is introduced to atoms and molecules, Chapter VII. devoted to the explanation of the Avogardro-Gerhardt law, and w of Gay-Lussac, the determination of molecular and atomic ts, with an account of the Conference in 1860 upon this subject. tudent will find, however, the wisdom of keeping to the large t first, as there is a lot to digest in this chapter.

bons and hydrocarbons constitute a very interesting chapter, and mplexity of the carbon molecule is clearly explained. Chapter ouching on the compounds of carbon with oxygen and nitrogen, eal of the whole work. The systematic and explicit way in the change from bicarbonate of ammonia into urea, and the e of urea into cyanic acid, is described; or, again, the change of nto foramide, and foramide into Prussic acid, thus ultimately g from ammonium bicarbonate to hydrocyanic acid, is a lesson in

valency of the metals, along with the laws of Berthollet, forms ening of Chapter X. Sodium chloride having been taken as a he preparation of salt and the manufacture of salt cake follows, r to illustrate the first part of the chapter.

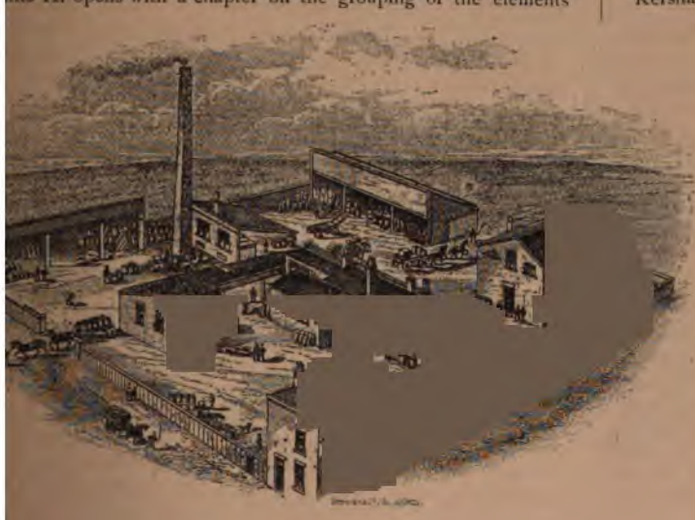
halogens, for the subject of the next chapter, embrace the manu- and theory of the composition of bleaching powder, both being iscussed. Catalysis is also explained in this chapter. We now o the first of the metals, sodium, followed, of course, by potas- ubidium, cæsium, and lithium. The chapter on sodium is devoted to the *rationale* of the Le Blanc process.

me II. opens with a chapter on the grouping of the elements according to the periodic law, the remainder of the work up to the commencement of the appendix being devoted to the properties and preparation of the elements, chiefly the metals. It is impossible to go in detail into this volume, as it would be such a lengthy matter. Suffice it to say that the whole is so interesting that those who once start to read will certainly be in no hurry to leave off, and it is only through sheer necessity that we have confined ourselves to such a cursory notice.

The appendix contains three very interesting papers bearing chiefly on the application of the periodic law.

This book constitutes a scientific work of the highest order. Still throughout the same the commonplace outcomes of the applied science have been brought into due prominence.

Thus, while dealing with the most abstruse subjects, the work is characterised from first to last with the definition and true simplicity of genuine greatness.



Joseph Kershaw and Co.

ESTABLISHED 1843.

THE spirit and enterprise of the people of Oldham and the district are well illustrated in the number and variety of their occupations. They do not confine themselves to one particular branch of business, but their energies overflow into nearly every department of industry, and prominent among the many large industrial establishments which abound in this busy district are the old-established works of Messrs. Joseph Kershaw and Co., grease, varnish, non-conducting composition, and soap manufacturers. This extensive business, which presents many features of more than ordinary commercial interest, was established originally in the Manchester Road, when, in consequence of its rapid development and the necessity for increased accommodation, the present extensive works at Hollinwood were erected some twenty-five years ago. They cover upwards of 8,000 square yards of ground, and comprise several large and well-constructed buildings, in which the various operations are carried out, also extensive warehouse accommodation, a well-appointed office and counting house, and all the accessories of a large and thoroughly organised establishment. The various departments are replete with machinery and appliances suitable for the effective and economical manufacture of the various products, and a large staff of men being regularly employed, the works at all times present a busy and animated scene of industrial activity. The firm are well employed in every branch of the business as manufacturers of cotton main driving rope grease, cotton and woollen mill gearing greases, locomotive, water wheel and wire rope greases, black, red, and other coloured varnishes, white diamond engine polish, Bolton polish, hard and soft soaps, a leading speciality being their celebrated non-conducting composition or cement for coating steam boilers, pipes, cylinders, etc., and the detergent composition for taking off incrustations or scale inside steam boilers. The non-conducting composition manufactured by Messrs. Kershaw and Co. is pronounced by practical civil, gas, mining, and other engineers, and a large number of firms who have tested its value, to be one of the best, most durable, and cheapest non-conducting material in the market, effecting a considerable saving in fuel by preventing the radiation of heat. It saves its cost in a few weeks, and will not burn.

Several tests have been made by eminent engineers, and the composition of Messrs. Joseph Kershaw and Co. has proved in every case without exception to be the most effective, and they were awarded certificate of merit at the Industrial and Art Exhibition, Manchester, 1880, the only award given in this department, after a severe competition with other competitors, and honourable mention at Manchester Smoke Abatement Exhibition, 1882.

To sum up all, we may say that it is fire proof, frost proof, sound proof, and vermin proof. This firm has a first-class business connection, extending to all parts of Lancashire, America, India, and the Colonies, which fact is sufficient guarantee of genuineness of the products manufactured by them.

Messrs. George Scott and Son.

Established 1834.

IN addition to the various machinery mentioned in our advertisement pages, this firm devotes great attention to the evaporation and concentration of various chemical and other materials. Amongst other novel forms of apparatus introduced by them is a vertical vacuum pan, with a heating surface composed solely of tubes instead of coils; this form of apparatus allows the introduction of a very large heating surface in a pan of small diameter; and owing to the various improvements introduced by them, they are enabled to deal with liquids containing even very large crystals. The utilisation of heat by means of four or five vessels, in which the steam produced in one vessel boils the liquor in the next, thus using the heat several times over is a point worthy of the attention of every chemical manufacturer to whom the utilisation of waste heat, and the very large saving of fuel, is of importance. Owing to the large variety of experiments carried out in this direction

by the members of this firm, even materials which have been considered too difficult to manipulate have been successfully dealt with. This apparatus is generally worked under a reduced pressure produced by the patent vacuum pumps, constructed in accordance with the various patents of this firm, and it is claimed by Messrs. Scott that their plunger vacuum pump produces and maintains a greater vacuum than any other class of pump used in manufactories for this purpose, one experiment carried out in their works, having been conducted under a vacuum of 30¼ inches of mercury. The compression and liquefaction of gases occupies also a large amount of attention, and Messrs. George Scott and Son have dealt with almost every one, if not all, of the gases, which have been liquefied; and their apparatus is in use in the laboratory of the leading research chemists engaged upon the liquefaction of gases, as well as the largest works dealing in liquid and compressed gases. Many plants for the continuous distillation of liqui are also turned out by them. Apparatus for drying various chemi products by heated air, or direct contact have been also the subject some of the patents lately taken out by them; and they have erec a small dryer in their works for experimenting upon the adaptabi of their plant, for dealing with the various materials sent to them. T class of work turned out by Messrs. Scott is throughout distinguish by its high finish and excellence of design, and they are always p pared to devote their personal attention to the provision of suita plant for special purposes.

The Gates Iron Works.

ONE of the chief machines produced at these works is the w well-known Gates rock and ore breaker. The principle of t breaker is very simple. The grinding head is a section of an inver cone, which is fixed, and does not revolve, thereby diminishi vibration. Within the head a ribbed cone revolves, which is driven bevel gearing direct from the power shaft, to which is attached a pull as shown in the cut below.

These machines are especially suited for breaking road metal, as have been perfected by degrees, until now they are made in vario sizes to crush from two up to one hundred and fifty tons per hour, at cost of less than one penny per ton. It admits of the stone bein dumped direct into the hopper, saving a lot of handling; and whe different sizes of stone are stored in separate bins, screens are al furnished, which separate the various sizes, and pass them into th receiving cars to convey the broken ore or stone to the bins.

These breakers have met with very considerable favour in the minin industries in the United States, and are found to be excellently suite for breaking wet ores, which often are a source of trouble, on accou of the ore becoming sticky when in the fine state, and consequent clogging the machine. The breaker is adjustable, and the head can b raised to compensate for wear.

These machines effect a great saving in power over those crushe constructed upon the jaw system, requiring about one-third the amou of power.

They are also fitted with a safety device to prevent breakage, shou a sledge or crowbar accidentally fall into the breaker. For chemist the laboratory for sampling, cement makers, ore crushing and quar breaking, this machine should prove itself very useful, and especial as it is, moreover, reasonable in price.

The Widnes Foundry Company.

Established 1841.

THIS noted and influential concern was founded at St. Helens b Messrs. Thomas Robinson and John Cook. The St. Hele business, now Robinson, Cook, and Co., is still carried on by th same proprietary as the one under notice. The Widnes works we started in 1861 by this firm, trading under the title which heads th review. They are of immense size, covering an area of nearly 32,00

e yards, a large part of which is built upon, while the remainder d out as yards, in which six steam travelling cranes of great r, besides a number of hand cranes, are fitted up. The works rise two boiler shops and two fitting and turning shops, in ion to five separate foundries and moulding shops, with all ental and auxiliary departments, and have a complete equipment e best modern plant and machinery applicable to the many and l purposes of the industry engaged in. A siding from the London North-Western Railway runs through the works, and the estab- ent in its entirety suggests the perfection of working resource and nient arrangement. The company employ about 400 hands, do a big trade in pipe and general casting, engineering, boiler ng, and bridge work. They devote much attention to the casting n pipes for water and gas supplies, and carry out many large important contracts in this connection. They also manufacture an t gas compressing or blowing engine up to any power for mines, ries, or chemical works. The valves of this engine are unique, and tear being almost eliminated, and they never fail in action gh speeds.

ey have also made some of the largest oil storage tanks in this ry. The leading speciality consists in chemical and alkali manu- ing plant, of which this firm are probably the largest makers in world. The company produce every description of plant and atus of this class on the most approved plans, and supply the ipal alkali makers throughout the world, most of the installations e Chance process having been made by them. Prominent features so found in plant for the recovery of sulphur; saltcake plant for Hargreaves and Robinson's patent process; evaporating pans of newest design for caustic manufacturers; decomposing pans, c pots, and boat pans of the best make, with all kinds of castings e chemical trade. So closely, indeed, are the firm associated the manufacture of chemicals in Lancashire and elsewhere that Thomas Robinson (the senior partner, now in his 78th year), may be termed the father of the alkali trade. He has throughout his business career taken the deepest personal interest in every new s developed in that trade, and is interested in a number of pro- , and has always made a special point of studying the require- s of each new departure in the chemical industry. The Widnes dry Company at the present day maintain valuable connections ghout the United Kingdom, France, Germany, Austria, Russia, d States, and other countries; and the splendid quality and high uctive excellence of their productions have gained them a wide- d reputation.

srs. Follows and Bates, Gorton, Manchester.

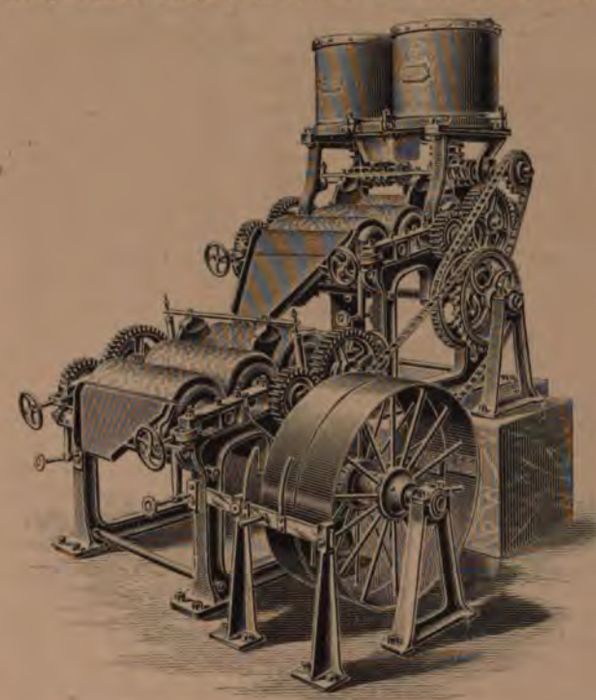
SHORT journey of ten minutes by the Manchester, Sheffield and Lincolnshire Railway from London-road station enables one to Gorton, and from this local station just four miles from the hester Royal Exchange, may be distinctly seen the works of s. Follows and Bate, Limited, which are represented by our

ving. These works cover about two acres, and find full employ- for a large number of workpeople. They are lofty and excellently lighted, and contain all the appointments which forethought could devise for the comfort as well as the convenience of every one concerned in the expeditious manufacture, storage and delivery of the specialties of the firm.

The business was established and founded by the managing director, Mr. F. W. Follows. In 1871 new and extensive works were built in Dutton-street, Manchester, and in the year 1885 it was found necessary to remove again further from the city in order to make provision for a steadily growing business in a heavy class of machinery, used more especially by paint, colour, and white lead manufacturers as well as by many engaged in the chemical and allied industries. It had been noticed by the firm that many processes in vogue, especially in paint works, were carried on with very crude appliances, and to remedy this numerous improvements have during the past few years been introduced by this firm.

The Triple Granite Roller Mill for example (which several firms of distinction had tried and discarded years ago, going back again to the old-fashioned Flat Stone Mills), Messrs. Follows and Bate have entirely re-modelled and re-designed on scientific principles, and converted into a tool of precision free from innate defects and of great durability, the larger sizes of which give an output of the finest white lead at the rate of eight tons per day.

The following description of machines of this type recently erected by this firm at the White Lead Works of Messrs. Hinshelwood and Co., Glenpark-street, Glasgow, will we think be of interest to our readers.



The illustration shows two Triple Roller Mills: one mill is raised the necessary height above the other to allow the white lead, after it has been discharged from the pug mills and passed through the first mill, to feed automatically down the doctor into the second, after passing through which it is taken off by a second doctor, and discharged finished into a cask or barrel.

The mill which carries the pugs is specially made for the purpose, and consists of a very strong cast iron frame with section similar to an H beam. The second mill is designed on the same lines, only it is rather lighter, not having the same weight to carry. The notable features of these mills are—first, the method of driving. From the illustration it will be seen that only one set of fast and loose pulleys are used for driving both roller mills and pug mills; the first mill is driven from the second by a chain drive, and the pugs are driven from the first mill in the same manner. The great benefits of this arrange-

ment are obvious, as in all white lead works space is more or less very valuable, and numerous driving belts are objectionable; by the arrangement adopted two belts are saved, one for the first mill and one for the pugs.

The cost is also considerably reduced, and trouble and delay caused through belts slipping and breaking avoided.

The pug mills are fitted with improved beaters, which are driven from a horizontal shaft by worm and pinion. The worm is fitted with clutch gear, by this method either one of both pugs can be stopped or started without stopping the rolls. The mills also, by an arrangement of clutches can be stopped and started while the pugs are being used.

The great benefits of this method will be appreciated by those who have had experience in white lead grinding.

The rollers in the mills are 30 in. on the face by 15 in diameter, and are made of the finest grey Scotch granite that can be obtained, great pains having been taken in the selection of the quarry.

They are carried on steel spindles, and rendered immovable by a special method. All the bearings on the mills throughout are made of gun metal, and the bushes on the side rolls are constructed in such a manner that the wear can be taken up without removing the rolls.

The centre rolls on both mills are fitted with a cam and cam bracket which gives them a lateral motion. This increases the grinding power of the mills and prevents them from fluting.

The mills made a fine start, everything going off as smoothly as possible, to the complete satisfaction of the firm for whom they were designed and constructed.

These triple granite roller mills are made in several sizes from 24in. by 12 in. to 30 in. by 15 in., and are fitted both with and without pugging arrangements; some are of the vertical type, as shown in the foregoing illustration, others of the horizontal type.

Improvements are now being steadily introduced in the construction of edge-runners, sieves, cone mills, and powdering machines. The latest novelty is a new form of mixer for pastes, liquids, or powder, which, it is believed, when completed, will be a long way in advance of anything hitherto attempted, whilst the trade will be duly advised in this Journal of progress made in every mechanical appliance which Messrs. Follows and Bate manufacture to keep abreast of the times.

Messrs. Rowland G. Foot and Co.

IT would seem that the system of purchasing machinery upon hire purchase is rapidly extending. Messrs. Rowland G. Foot and Co., of 12, Great Saint Thomas Apostle, London, E.C., were the first to supply all descriptions of machinery in this way, and we believe that they are at the present time the only firm from whom the various descriptions of machinery can be purchased upon deferred payments. In many instances they have carried through extensive transactions with important firms upon this system, resulting in the complete satisfaction of the purchasers, who frequently have been enabled thereby to undertake transactions and make extensive profits that they would otherwise have been quite unable to secure. It would seem that the objection so usually entertained by firms in good positions to obtain machinery in this way is, to a large extent, dying out, and is looked upon by some as being no more objectionable or discreditable than mortgaging the buildings or other portions of the works at which they carry on business. The prices charged by this firm, we are informed, are not higher than those usually charged for cash transactions, except that, of course, no cash discount is allowed.

Messrs. Scott and Co., Newton Heath.

THE improvements which have been made in the appliances for lighting works and outdoor work in general, during the last three years, have been of a very widespread and varied nature. Necessarily one and all are more or less the same in principle, but there is good scope for improvement and variation in the method of construction. It is here, therefore, generally that the distinctive feature of each particular light is to be found.

As we have anticipated, it proves to be thus with the "Sco light, which, though somewhat familiar in appearance, claims orig ality chiefly in the construction of the burner. This is instead of be made of iron, as is usually the case, is made of steel, thereby secur greater strength and durability. It is also adapted for burning differ kinds of oils, as it is fitted with a patent adjustment, by means of wh it can be regulated to burn either petroleum or crude oils. On account this light is especially suitable for export. As will be seen the illustration below, there is very little piping, so that the chances the tubes becoming choked are very slight. The *modus operandi* not at all involved as will be seen from the following description :—

Three steps only are necessitated. First the air cock is opened unscrewing the conical valve at A, when oil is pumped into the ta until the latter is about three-parts full. This having been done, t air cock is closed again and the second operation performed, whi consists in pumping in air until a pressure not exceeding 25lbs. attained as indicated by the pressure gauge D. When this done the tap C is closed, thereby effectually preventing any leaka should the packing of the pump be deficient in any way.

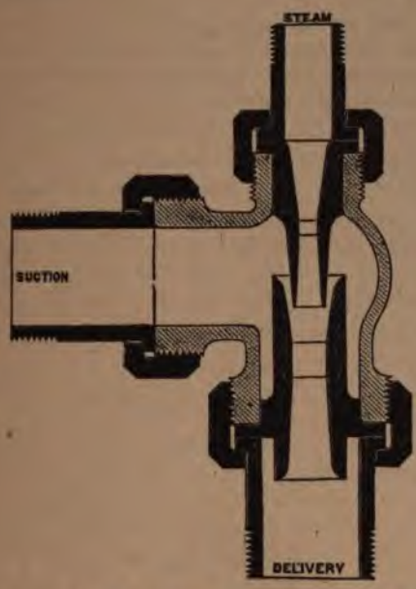
The third and last operation is to start the light. In order to do this handful of oily waste is placed in the burner E, and a light applie Allow this to burn for about ten minutes to warm the burner, and th slightly open the oil valve B, when the oil ascends to the burner an ignites, after which the valve B is regulated until a white smokele light is obtained. When once the lamp has been started it works co tinuously, as it can be re-charged with either oil or air witho stopping or interfering with the light. These lamps are made in vario sizes, from "The Infant," which has an adjustable standard so that t flame is either horizontal or at an angle of 45°, to one having a 40 flame of from 3 to 4,000 candle-power, such as we have seen at chemical works, where it was giving satisfaction and worki continuously.

Mr. T. H. White.

THE works of Mr. T. H. White are situated in Harrison-stre West High-street, Salford. These works were established 1883, and were first situated in Crowther-street, Regent Road, bu finding these premises in a very short time becoming too small for h increasing business, Mr. White purchased a plot of land, with building at the above address.

The staple production of these works is injectors, for which M White has taken out several patents, including the exhaust injecto the automatic high-lifting injector, and the renewable steam-jet pump,

Special attention has been paid to the requirements of the chemical trade, and below we illustrate an improved injector pump, which is made in gun-metal, lead, or antimony, and is used by most of the leading chemical manufacturers in this country for lifting acids and other errosive fluids.



As will be seen, it is filled with two cones, which alone are subjected to the greatest wear and tear, while the pumps are so constructed that these cones can be easily and quickly replaced when necessary.

Mr. White has, we believe, even further improvements at present under consideration, with the object of producing these articles at a still lower figure.

Mr. Alfred Smith.

ESTABLISHED 1856.

THE Excelsior Works at Clayton were established by George Smith, and since his retirement from business have been carried on by his son under the present title. Since the opening of these works the trade has increased rapidly, and many new specialities have been added to those originally produced. The processes carried on include the manufacture of bisulphide of carbon for vulcanising and oil extracting purposes, chloride of sulphur, sulphide of antimony, and india-rubber substitute. This is a speciality, and great attention has been given towards producing a quality which shall have the least deleterious effect upon india-rubber or fabrics. The fact that this has been efficiently attained is evinced by the largely increasing sale and its use by some of the most influential firms in the country and on the Continent. Other chemicals for india-rubber purposes are also manufactured on the premises.

The Excelsior fluid disinfectant has now become well known throughout the country. Several of the railway companies have adopted it in preference to all others. Its important features are that it is non-poisonous, and that it does not injure the skin. Its effect is to instantaneously remove bad smells, and it leaves no objectionable odour behind. It is moreover perfectly miscible with water in all proportions, and is remarkably economical in use. Mr. A. Norman Tate, F.I.C., F.C.S., has given an excellent report upon it.

Mr. Smith also makes a detergent, which is extensively used by bleachers for bleaching cotton, linen, yarn, and cloth, its object being to produce a better white and at a less cost by reducing the quantity of soda ash used; for wool scouring also it is giving excellent results, 1 cwt. doing the same work as 7 cwt. of soda crystals.

Glycerine substitute or Epsom softening is another speciality. This softening is used for finishing purposes. It considerably improves the nish of the cloth, giving it a full but soft feel. The difficulty of

obtaining a glaze or polish on the surface of the cloth after stiffening with Epsom salts is very much assisted by using a small quantity of the softening, and afterwards calendering. Bone size substitute again is ntended to be used with bone size, or to displace it entirely, whereas the ordinary bone size is certainly detrimental to health from the strong and highly objectionable smell given off. This substitute is entirely ree from smell, and when goods are warehoused the atmosphere maintains its former purity, and consequently no inconvenience is experienced on this account.

The foregoing comprise some of Mr. Smith's chief productions, but, in addition to these, the remainder of his works is occupied in the production of velvet finish, oleine and soluble oils, linseed oil and turpentine substitutes, dyers' solutions, etc., which are turned out in considerable quantities.

Messrs. Askham Bros., and Wilson, Limited.

ESTABLISHED 1866.

THE Yorkshire Steel and Engineering Works of this firm at Sheffield have now been well known for some ten years or more. Amongst other things, special attention is given to the manufacture of their patent grinding and separating machinery.

The separator itself in this apparatus is a very interesting piece of mechanism. It consists of two conical cases placed one within the other, the apex of the cone pointing downwards. At the base of this inverted cone is fitted a fan worked by a vertical shaft, which blows the finely ground particles into the inner case, where these collect and pass out by two pipes either to the right or left as may be desired. The apex of the outer case is likewise connected with a pipe, which returns the coarse particles to the breaker.

The complete plant consists of a patent breaker, centrifugal pulveriser, separator, and elevators, which latter can be made with either wood or iron casings. The cycle of operations is as follows: The material is fed into the breaker; then elevated into the pulveriser, and thence into the separator. The fine material falls through the shute direct into bags, while the coarser material is returned by a spout back into the pulveriser for further reduction. The whole plant is automatic, and takes very little power to drive it. By the action of the separator a better quality is secured, the finest and medium dust being thrown together, thus superseding the old system of stive rooms and dust boxes (where the sample varies in each case), and thus prevents the waste of the finest portion through the exhaust, producing a uniform sample of the required fineness, and by a slight alteration of the damper the required residue may be obtained.

The patent separator can also be used in conjunction with stones or other grinding machinery, and will be found most economical and thoroughly efficient by reason of the separator taking out the fine and leaving only the coarser portions to be returned to the stones. The material can be taken from the machine direct into the bags, thus saving considerable time and expense. Worms and worm boxes, varying from three to twelve inches in diameter, are also made by this firm, which are specially adapted, and now largely used, in cement and lime works. This plant is one that fills a want in works of all descriptions, especially chemical, cement, and manure works. Many well-known firms, amongst which may be mentioned Messrs. Brunner, Mond and Co., the North British Chemical Company, the Eglington and Irvine Chemical Company, also the London, Rugby, and South Wales Portland Cement Companies, have been supplied with this apparatus for grinding and separating purposes, and it is apparently particularly suited to chemical works, seeing the material which is being ground and separated is kept to a large extent free from contamination with the gases and fumes existing at a large works.

Messrs. Woodhouse and Rawson, United, Limited.

MESSRS. Woodhouse and Rawson, United, Limited, are well known in the trade as one of the most enterprising as well as one of the largest electrical engineering manufacturing companies. Since the formation of the present company, in 1889, it has been the aim of the directors to place themselves in a position to manufacture every requirement for electric lighting, and with this object, in addition to the instrument works at Kensington and tool works at Manchester, the company have acquired the launch works at Chiswick and foundry at Kidsgrove, where they are able to make castings ranging up to 20 tons in weight. Their head offices are at 88, Queen Victoria-street, and these with the adjoining premises, 84, Queen Victoria-street, or, as it is better known, 34, Cannon-street, form the city premises of the company. In addition to the secretarial and managerial offices, the company have here the installation department, which has executed a number of large and most successful installations of electric light and power, and the supply department, which has one of the most extensive connections for the supply of electrical apparatus in the world. The mechanical engineering and hydraulic machinery departments (Payne-Gallwey's system) also have offices in the buildings. At Kensington the world-renowned "Diamond" switches are manufactured, as well as small electrical and mechanical appliances of every description.

The Cunynghame, Woodhouse and Rawson patent magnetic cut out has probably been used on more installations than any other similar appliance in the world.

At Manchester, a sketch of which works we show, the company manufacture telegraph instruments, small machine tools, lathes, circular saws, etc, the demand for which is steadily increasing, thus proving the satisfactory character of their design and workmanship.

Direct current dynamos and motors are also made here, of a type which the company have found very efficient for general work and such special uses as propelling launches, etc.

The growing popularity of electric launches led the company to pay special attention to the manufacture of motors for this purpose. Possessed as they are of every convenience for the building of same outright, the company has been able, not only to introduce many improvements in design, but also to produce a number of well-equipped craft. In the early part of the year they built a pinnace, the "Electric," for the British Government, which at the present time is being tested at Chatham Dockyard.

At the Kidsgrove Works the company manufacture boilers, engines, water works plant, gas holders, large alternating current dynamos, hydraulic machine tools (Payne-Gallwey's system), and meet every description of mechanical engineering requirements. They are also the sole owners of the Jensen-Bell patents, and have every confidence in appealing to those who have used them as to their durability and utility.

At the present time the company have in course of preparation what is undoubtedly the most complete electrical trade catalogue in the world, and with this we think our readers will cordially agree when we mention that the advance copy inspected by the writer was a book of over 600 pages, and illustrated with nearly 1,200 first-class wood engravings.

The Blackman Ventilating Company, Limited.

E Blackman Ventilating Company, Limited, may fairly claim to be regarded as pioneers in mechanical ventilation, especially in trial establishments.

m the soundness of the principles on which they work, and from constant effort to secure as far as possible the success of every Black- ent out, the natural result has followed, and now in nearly every y and trade throughout the world these fans are doing good work, 10,000, averaging 36 in. diameter, being used for industrial pur- alone, displacing hourly over six thousand million (6,000,000,000) feet of air, and removing with it either heat, steam, dust, or floating nuisance.

y kind of motive power serves for driving—steam, gas, water, hot r electricity – and very little is required in proportion to results.

e shape of its blades enables the Blackman, at a moderate speed, work which, if done by any other appliance, would have to be by dint of greater speed, power, and cost of working. In other , the Blackman is at its best within the moderate limits of speed re most consistent with sound and economical working.

buildings and circumstances vary infinitely, there are probably no pplications of the Blackman alike, though the same principles been followed throughout. This explains why the company take uch pains to secure successful applications, and also why they plish this end whenever practicable by the aid of special free ng drawings, raher than by attempting to serve the purpose y printed illustrations.

ir were visible, the practice of ventilation would be a much easier The slow and general movement of all the air in a room would e recognised as most natural and desirable, and any intense local r "draught" would be voted intolerable. Everybody would easily understand the difference between pressure and volume.

former is the object in rotary blowers and centrifugal or blast they produce their intense blast at the expense of volume, whereas Blackman great volume is attained instead of an intensity not ed for the purpose, but prejudicial to it.

Mr. W. H. Bowers.

ESTABLISHED 1856.

E works of Mr. W. H. Bowers, situate at West Gorton are devoted chiefly to the manufacture of wood acid, brown lackwood, tar etc., obtained by the destructive distillation of . For this purpose a patent retort, invented by the owner of the , for carbonizing waste wood and sawdust, is employed.

ongst the specialities produced at these works is acetic acid, pre- for commercial and domestic use. containing respectively 25% 0%. Also an acetic acid for the use of white lead manufacturers, has met with considerable favour amongst the leading makers north of England.

lico-printers' chemicals are also manufactured at these works ; in- ng a patent colour-size which is cheaper and more efficient than glue-size. Also special finishers' red and scarlet liquors, muriate of iron, pure acetate chrome, etc., for dyers and calico-printers.

Charcoals resulting from the distillation of various woods are naturally amongst the products, including a specially prepared logwood charcoal. A boiler fluid, which can be introduced through an injector or pump, is likewise produced at these works, in addition to their previously mentioned specialities.

The "Cannon" Hollow-ware Company, Limited.

ESTABLISHED 1826.

THE extensive works of this company are situated at Deepfields, near Bilston, Staffordshire. It is only within the last decade, however, that the firm has been known by its present designation, the business having previously been carried on in association with the name of its founder, under the style of "Edward Sheldon and Co."

It would be impossible within the limits of the present article to enumerate the gradual developments by which the business has become one of the most important of its kind in the manufacture of porcelain, enamelled, tinned, and black cast iron hollow-ware, and general export, culinary and chemical castings, etc., or to refer at length to the company's productions. These are of a most varied description, and suffice it to say that the

"CANNON"

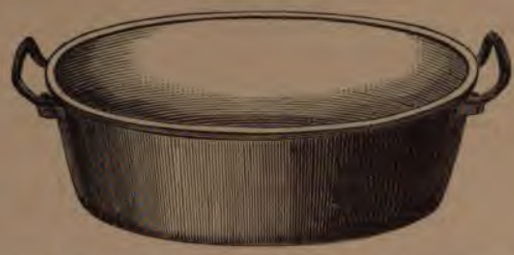
brand, which is the company's principal registered trade mark, is well known in most, if not all, the markets of the world, the goods enjoying a high reputation for uniform good quality and utility.

The porcelain enamelling department of the company was commenced some years back, and is now on a very extensive scale. Porcelain enamelling on cast iron is becoming more widely known and appreciated, but as the production of high-class enamels entails a great outlay of capital, and the process being a secret one, the trade is necessarily confined to a few manufactures. The "Cannon" Hollow-ware Company, Limited, have, by their enterprise, energy, and perseverance, done much to bring enamelled cast-iron ware to the high state of perfection it has now attained. This department of the works has four branches, viz. : (1) For the enamelling of cast hollow-ware for culinary purposes ; (2) sanitary and general castings, including baths, lavatory appliances, and appurtenances ; (3) gas cooker and gas heating and lighting appliances ; and (4) chemical utensils, etc.

The latter branch will have the most direct interest to the readers of this Journal, and we are pleased to note that the special "Acid resisting enamel," since its introduction, has given very great satisfaction.

In the production of this particular enamel, the absence of a brilliant glazed surface will be understood, as for obvious reasons appearance has been subordinated for the more important considerations of obtaining an enamel combining hardness of surface and tenacious adhesion, with the absence of pin holes, so as to afford complete protection to the iron, and prevent its being attacked by chemicals.

The company have supplied large quantities of furnace boilers, evaporating bowls, pots and pans of every size and shape with this chemical enamel for important manufacturing chemists and others, and the demand for their specialities is largely increasing.



We give a few illustrations of enamelled vessels in general demand, but the company also supply articles to suit customers' own requirements in the matter of special patterns, etc.

It should be mentioned also, in connection with the general excellence of the "Cannon" productions, that the company exhibited at the Melbourne Centennial Exhibition, in 1888, when they were awarded First Order of Merit and Medal, and again, at Jamaica, in the present year, when they received the award of Gold Medal and Certificate of Honour.

The Buckley Brick and Tile Company, Limited.

ESTABLISHED 1865.

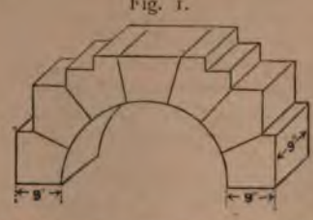
THIS company was originally formed by the purchase and union of the Belmont and Brook Hill Works.

The works of the firm are situated at Buckley, near Chester, and although no great extensions have been made in the works themselves the firm has been successful in improving many articles already in use, and also manufacturing several fresh ones which had hitherto not been made, either in this district or elsewhere.

These products are too numerous to receive individual reference in an article as short as the present, so that we shall have to confine our attention to the consideration of a few of the most important ones. The Buckley Brick and Tile Company make three distinctive classes of bricks, for the use of chemical engineers and others. The chief of these is the well-known "Metalline" brick.

This brick is specially intended to resist the action of acids and alkalis, and has been employed with great success for lining Glover towers, etc., showing but very little sign of having been acted upon, after some months of continuous use. So useful have these bricks been that they have now also been utilised not only for lining, but for the construction of the arches of the flues and towers as shown in the accompanying cut.

Fig. 1.



The processes and industries in which these bricks and tiles are employed are very numerous, including, amongst others, chemical, lead, glass, iron, and gas works.

Of those articles which will be of the greatest interest to our readers, on account of their being directly connected with the alkali and general chemical trade, we have selected the following, illustrations of which we have reproduced, most of the same explaining themselves without further comment.

Figures 2, 3, and 4 represent various forms of the "Metalline" bricks and rings already referred to for lining Glover towers.

Fig. 2. Fig. 3. Fig.

Before leaving the subject of these bricks, we append, for the of those of our readers more directly interested in clays and the articles produced therefrom, three analyses of the bricks made firm, each variety of brick being indicated by its trade mark :—

TRADE MARKS:—	B.H.B. Brook Hill Blue.	F W FLINTSHIRE WHITE	"METAL
Silica (SiO_2).....	73·25	60·04	63·0
Alumina (Al_2O_3)..	17·89	32·10	25·9
Peroxide of Iron (Fe_2O_3)	5·91	4·71	6·4
Manganese Tetroxide (Mn_3O_4)	0·40	—	0·7
Lime (CaO)	0·41	0·48	0·8
Magnesia (MgO)..	0·36	0·24	0·4
Soda (Na_2O)	0·86	0·95	trac
Potash (K_2O)	0·83	1·46	2·5
Organic matter and water	0·11	0·10	0·0
	100·02	100·08	100·0

In tiles for the construction of drainers and dryes, strainers, etc. following three types furnish a good idea of the varied applicati which these articles may be put :—

Fig. 5. Fig. 6. Fig. 7.

Whilst, lastly, we come to much more complicated pieces of in the shape of acid lifters and forcers, and also sprayers for spre the acid evenly in the decomposing furnaces, in the first stages Leblanc process. Figures 8, 9, 10, and 11 depict these articles, figures 10 and 11 showing two views of an acid lifte being in section.

Fig. 8.

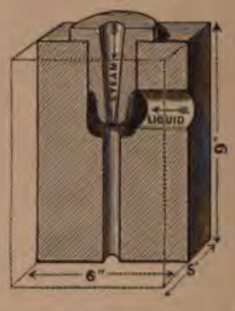


Fig. 9. Fig. 10. Fig. 11.

ther productions of this firm comprise special bricks for boiler bridges' culverts, dock walls, and, in fact, any shape of brick special section is required.

ssrs. Philip Harris and Company, Limited.

ler to meet the requirements of their trade, Messrs. Harris and npany, Limited, have lately removed into new premises in Edmund-street, Birmingham.

new pre- of which we illustration, en especially l and built for , in order to the prosecu- heir business. ock occupies ix hundred rds of land, g Edmund- aving also a trance from street. The ilding con- five floors, out 120 feet 30 broad, re devoted ely to the branches of upon enter- n Edmund- we find our- a handsome shop and show-room combined. Show-cases g every variety of apparatus requisite for the furnishing of laboratories, for the use of professional, analytical, and works etc., are arranged so that, by inspection, purchasers can cide upon the particular form or class of apparatus they require. his show-room, and on the same floor also, is the packing-

the ground floor a broad staircase passes up to the first floor, also devoted to stock for the chemical apparatus trade. In to being well-fitted, the offices are also on this floor, so that vantage is afforded for the expeditious treatment of extensive

ors above, which are connected with the others by a hydraulic et apart as stock and sale rooms for the various branches of ical and drug trade, an extensive stock being always on hand. . Philip Harris and Company, Limited, also make their own ly pure reagents and chemicals, for which purpose they have and equipped in the most modern and approved fashion, their ies, which are situated between the back of the building and eet.

e benefit of the leading chemical industries this firm devotes rtment solely to the preparation of apparatus, etc., for alkali iron and steel works, dyeing and bleaching works, etc. many of their specialities in this department may be men- ayley's carbon tubes, which are a set of colour standards for ation of combined carbon in steel. Also Harris's polarimeter instrument) for sugar estimations, etc. This instrument has lared by many people to be quite as accurate for technical pur- he most costly Continental instrument, and numbers have plied to breweries, sugar refineries, etc.

universal microscope has now been known for some time as a trument for ordinary use, as likewise their hand camera, this ing a speciality of photographic apparatus and chemicals, in to those we have already enumerated.

Messrs. Francis Sutton and Co

THE specialities of this firm are mainly connected with the science o chemical analysis by volumetric methods, the head of the firm being known throughout the chemical world by his widely distributed "Handbook of Volumetric Analysis," which is now in its sixth edition, and has a large circulation in America and the Colonies, in addition to that of Great Britain and other parts of Europe.

The development in a large class of manufactures characterising the present age is mainly due to the aid of chemical science, and many of the old methods based on rule of thumb have been superseded by more exact methods embraced on technical analysis.

The efforts of this firm are in the direction of designing and arranging simple methods of quantitative testing by means of standard solutions, so as to bring the use of them into the hands of intelligent working men, in cases where practised chemists are not on the staff or where it would be too costly to apply to an outside professional chemist.

The scope of such work is, of course, largely varied, but instances may be given, such as the strength of acids or alkalies and bleach, gas liquor and compounds of ammonia, phosphates in the raw state or manufactured manures, the hardness of waters or the measure of other constituents, such as salt, lime, magnesia, etc, when used for boiler purposes and by brewers.

The firm also manufactures special standard chemicals of known degrees of purity, and standard solutions for use in every branch of exact analysis. They also are makers of special test papers of a very sensitive character, and all varieties of indicators for use in volumetric analysis. No pains are spared to send out everything they manufacture in as reliable and trustworthy state as possible. The wide reputation this firm has gained at home and abroad, together with the constant increase of their business, is evidence that their care and diligence is appreciated.

Messrs. Brotherton and Co.

THE chemical works of this firm were established at Calder Vale, Wakefield, in 1878, by Messrs. Dyson, Sons and Brotherton, who for some years carried on a large business in the manufacture of sulphate of ammonia, holding contracts for the gas liquor produced at the gasworks of nearly all the large towns in the neighbourhood. In 1882 the firm secured the contract for the whole of the Leeds liquor, and proceeded to build new works near Meadow-lane Gas Works, Leeds, where they laid down an extensive plant capable of dealing with the whole of the production from the three works belonging to the Leeds Corporation.

In the year 1888 the firm of Brotherton and Co. was established, who, in the first instance, confined their operations to the distilling of tar. An excellent site for such works was secured at Rothwell Haigh, about three miles from Leeds, just outside the borough boundary. Here the firm purchased an area of about ten acres of land between the main line of the Midland Railway and the Aire and Calder Navigation Canal. The works are connected by a siding with the railway and an adjoining colliery, and also have a wharfage of about two hundred yards on the canal. An extensive plant, embracing all modern improvements, has been erected, capable of working fully 500 tons of tar per week.

In 1889, this firm took over the business and chemical works before referred to at Leeds and Wakefield, and the firm of Dyson, Sons and Brotherton became extinct. Not satisfied with these important undertakings, the firm now (1889) acquired the Cement Works at Calder Vale, Wakefield, adjoining their chemical works, which had been successfully carried on for many years by Mr. William Saville. With the energy characterising all the firm's operations, additional plant with every improvement was at once put down, and the productive capacity of the works quadrupled.

The article manufactured is known as the "RELIABLE" Brand of Best Portland Cement, and, having been used in many very large and important works, has obtained a very enviable reputation as a cement

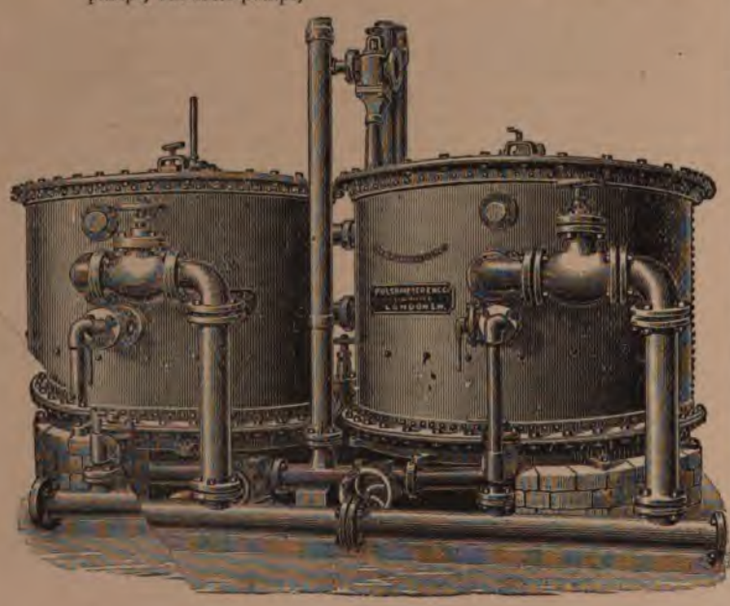
of sterling quality. The chemical and cement works at Calder Vale now take a prominent position in the industries of Wakefield, having siding accommodation with the Lancashire and Yorkshire and the Great Northern Railways, and a wharfage on the Aire and Calder Navigation.

At the chemical works at Leeds and Wakefield the manufacture of sulphate of ammonia is extensively carried on, and the firm do also a large business in crude ammonia liquor. All qualities and strengths of pure ammonia are likewise manufactured. This firm is ever on the alert to strike out any new line which may open a prospect for improvement and profit. The head quarters of the firm are at Commercial Buildings, Park-row, Leeds, and the offices there situated are connected by telephone with the whole of their works.

The Pulsometer Engineering Company, Limited.

THE works of this company are conveniently situated on the River Thames at Nine Elms, London, S.W., and possess special advantages for the manufacture of first-class machinery. Packages up to 10 tons in weight can be loaded by crane into craft alongside, thus enabling goods to be sent to the ship's side in any London docks, avoiding dock dues, etc.

Some of the specialities manufactured by this company in connection with the chemical trades are the well-known "Pulsometer" patent steam pump illustrated above, the "Deane" direct acting and duplex pumps, vulcanite pumps,



'Torrent" filters, and ice-making and refrigeration mach treating liquids, gases, etc.

The first-named speciality, of which the trade mark Pulsometer," is a steam pump which can be used for pumpin anything in the nature of a liquid without choking. It is ver used in the chemical industry, owing to its extreme simpl handiness. We append an illustration of this pump, from will be seen that it has no rods, glands, or pistons. The only parts are the simple valves, and these can be replaced on the almost any one.

The company's "Torrent" filter is also strongly recomme dealing with large quantities of very dirty water, and renderi suitable for boiler feeding, hydraulic and manufacturing purp These filters are absolutely reliable, and the filtering material i without removal in a few minutes daily by stopping the filterin and flushing with clean water in the opposite direction to th of the fluid to be filtered.

Messrs. Adley, Tolkien and Co.

THE demand for chloride of zinc for the textile industrie home and abroad is so rapidly extending year by year, primitive method formerly in vogue for its manufacture utterl producing the needful quantity or quality to satisfy the require the present day. To meet this necessity, Messrs. Adley, Tol Co. have erected very extensive works at Blackburn. By the of these works a most important industry, which deserves mor passing notice, has, for the first time, been introduced into Bl The works are conveniently situated on the bank of the L Liverpool canal, by which water communication with all the manufacturing towns of Lancashire and Yorkshire is afforded.

The process of manufacture of this chloride, which visitors a allowed to witness, is of a very interesting character. The pl sists of three large furnaces, in which the zinc ore is roasted. the furnaces it passes into three acid cisterns composed of ste weighing eight tons each. From these, when solution is com is syphoned into nine other cisterns, in which the iron naturally in the ore is removed by chemical means. The extraction o is so perfectly accomplished, that the residue is practically f zinc, containing less than one-hundredth per cent.

From the clearing cisterns it is pumped into large pans, wh concentrated to 200° Tw. Thence it is taken to a series of clarifiers, and afterwards through a large filter to clear it of ev impurity, the filtered liquid being perfectly pure neutral ch zinc of 200° Tw. Its strength is next reduced to 102° Tw., th strength which manufacturers employ, and at this final stage it i so as to ensure uniformity of strength, and absolute freedom fr salts, and lime. As finished and placed in casks it contains zinc chloride.

For export, it is prepared and put up in a solid form, contain of zinc chloride, the remaining 1% being moisture. The solid packed in lead-lined casks, this being necessary on account of temperature at which the finished product is packed. If pla were employed, the wood would char, and the chloride beco taminated with carbonaceous matters in suspension.

plant we have described is calculated to produce 50 tons per
f liquid chloride such as described above, and 20 tons of the
r export.

nesium salts are also commodities to which this firm has directed
attention, in which, judging from the size of their stock, they do
business.

warehouses adjoining the works are commodious, and the stock
es that this firm have made a speciality of the chemicals
ed in the textile industries, as we noticed chiefly, large stores of
tallow, china clay, Epsom salts, gloy, and Lancashire size, as
numerous other sizes and softening materials.

Messrs. Thomas Broadbent and Sons.

)NGST the most enterprising and thriving firms in Huddersfield
nust be reckoned that of Messrs. Thomas Broadbent and Sons.
ed by the late Mr. Thomas Broadbent about 25 years ago as a
engineering firm, it steadily progressed whilst in his charge.
unately that was not for a long period, as he died about the year

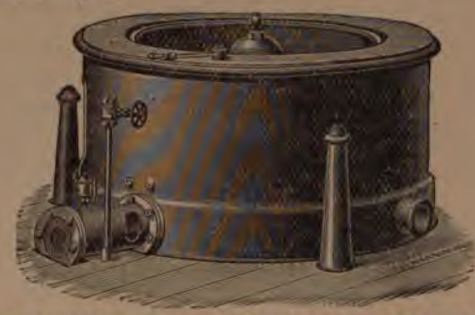
The entire charge
e business then
ed upon the two
Mr. William and
orace Broadbent,
se hands it has
ed to prosper and
in a most grati-
manner. During
istence the firm
turally developed
n specialities,
t which must be
ed hydro-extrac-
nd the plant used
r manufacturing.
e former they have
reputation, and
latter the firm at the present moment holds a large contract
ipping a sugar plantation in Cuba, as well as smaller ones. So
y has the business been growing that a large extension of pre-
has had to be made, which has just been completed. Since our
ue we have had the pleasure of inspecting the extension, and a
rticulars thereon may not be without interest to many of our
.

immediate conditions of the site of the older portion of the
were very favourable for extension. At the one extremity there
vacant oblong plot of land, the lines of which were parallel with
f the existing works. It is this plot that has been covered by
w buildings. The site of the whole works, which is now covered
uildings, consists of an oblong block of one acre in area. The
s just added include a new boiler and engine house, a large and
foundry, with furnace; new smithy, and new erecting shop.
able feature also of the extension is a new suite of offices, which
mirably designed and furnished, those for commercial purposes
ying the ground floor, whilst those devoted to drawing are placed

whole of these offices are lighted by electricity from an installa-
upplied by Messrs. Ernest Scott and Mountain, Limited,
cal engineers, Newcastle, which is in operation, and has proved
satisfactory, not a single hitch of any kind having occurred since
installed.

oundry and erecting shops are fitted with travelling cranes, which
be worked by electricity. The water supply for the boiler has
cleverly utilised in a remarkable way. It is derived from town's
and, as the pressure is considerable, it has been made to work
raulic lift, which lifts the pig and other iron to the charging
m of the cupola. When the lift is lowered, the water used to
it is discharged into a tank whence the boiler is supplied. The
lifting of the iron to a proper level for the service of the furnace is thus accomplished without any cost save the initial outlay necessary for the lift.

When finished and completely furnished these works will form one of the best designed, most commodious, and well equipped establishments in the district.



We illustrate herewith one of the principal specialities of this firm, namely, their patent suspended direct steam-driven hydro-extractor. This machine is extensively used in the chemical industries for separating the moisture from various chemical substances which require to be dried; the machine is entirely self-contained, there are no belts nor counter gear of any kind, and being "suspended" no heavy foundation is needed, which would otherwise be the case, as some of these machines are run at a speed of 1,200 revolutions per minute.

Messrs. Manlove, Alliott, and Company, Limited.

ESTABLISHED 1837.

THIS well-known firm of engineers have for a long time made a specialité of apparatus and drying machinery for the use of blood driers, sugar refiners, and makers of pure chemical products. Their works are situate at Nottingham, and are known as the Bloomsgrove Works. The substantial appearance of the works from the outside does not belie the efficiency of the interior arrangements, which are systematic from the outset, passing in turn from drawing office to pattern shops. The foundry is situated in close proximity to the latter, whilst the fitting shops are situated according to their respective requirements in convenient positions.

One of the branches of business to which special attention is paid a Bloomsgrove Works is the construction of improved appliances for dealing with towns' refuse. "Destructors," or special furnaces for destroying ashpit and other refuse collected by the scavenging departments, are still increasing in favour with local authorities, and extensive works of this description have been erected by Messrs. Manlove, Alliott, and Company, Limited., at Buxton, Bournemouth, Battersea, Hampstead, and elsewhere. In some cases where the refuse sent to such furnaces has been of a specially objectionable character, and where other circumstances have been unfavourable, it has been found possible for some unpleasantness to arise from the process of burning, and improved appliances have been devised which, when used for such exceptional cases, have been found capable of surmounting any difficulty of this description.

Another part of the refuse of towns requiring careful and drastic treatment is sewage sludge which is produced in large quantities where the sewage is run into precipitating tanks, in order to remove the solids, and to leave only a clear effluent, which is allowed to pass over

land. To deal effectually with such sewage sludge, filter presses of special construction are made by the Nottingham firm. The sludge is forced into them under high pressure, the solid matter being retained in the press in the form of cakes, much resembling oil-cake in appearance, though not so hard and tenacious, while the liquid, which forms the bulk of the sewage mud, and which renders it difficult of use or transport, passes away. The presses used for such purposes are of massive construction, and the sewage sludge is usually forced into them by compressed air. The firm have also applied this compressed air pressure in moving the heavy parts of the presses, when from time to time they have to be opened and closed, and they have also designed specially compact and simple air compressors for producing the required supply of compressed air. Numerous plants of these various appliances have been supplied; one of these most recently started having been furnished to the Corporation of Lincoln.

Chief amongst the appliances for drying of refuse may be mentioned the Firman machine and the Johnstone dryer both being suitable for use in the production of dried blood, in the utilisation of the offal of slaughtered animals, and in the production of fish guano The Johnstone dryer consists of a flat-bottomed, steam-jacketed pan, into which the blood, or offal, or refuse fish is put, some 25 or 30 cwts. forming the usual charge. In this pan the material is subjected to steam heat, while at the same time it is prevented from adhering to the bottom, and is agitated and opened up so as to allow the steam generated in the process of drying to escape. This agitation and opening up is effected by means of suitable scrapers or stirrers. The pans are usually covered in and connected with a condenser into which the vapour as it is generated is drawn, and in which it is condensed, the danger of nuisance from the vapour given off during the process of manufacture being thus avoided. Any vapour which is not thus condensed may be passed through a form of deodorizer, which has been designed for the purpose, or may be passed through the boiler fires and thus burned.

The Centrifugal Hydro-Extractor is, however, *the* specialité produced at these works, this firm being the original patentees and introducers of this class of machine, which at first was made only in one or two simple forms. More recently many different developments of the machine have been devised to suit varied requirements. Thus machines are made to be suspended from above instead of being supported from foundations below them; or to rest upon the ground and yet be free to

"Pendulum" Hydro-Extractor and Engine Combined.

vibrate when unevenly loaded without communicating their own vibrations to the foundations upon which they rest. Others are made in which the material that has been dried in them may be discharged through the bottom instead of being lifted out of the top of the revolving cylinder. Again, centrifugal machines are, in some cases, combined with engines which become a part of the machine since the crank shaft of the engine is the spindle on which the basket revolves. Special types are also made—such as that we have previously alluded to, which is used for the production of cube sugar—in which material is subjected to treatment by steam. The "Pendulum" and the "Slipper" types of combined centrifugal drying machine and engine have lately found great favour with purchasers.

This firm also recently devoted its attention to the manufacture of the Cycle Gas Engine and Oil Mill Machinery. The machinery for this purpose has undergone much change in recent years, roller mills having—as in flour milling—to a large extent superseded stones for crushing the material, while improved forms of kettles for heating and moulding the crushed seed, and for preparing it automatically for the presses have been devised and new forms of presses introduced. These various changes have enabled the oil manufacturers to obtain an increased yield of oil from the seed, and to economise the labour required in its production. Oil mill machinery has been made a specialt for many years by the late firm of Messrs. Joseph Whithan and S Leeds, and when their works were closed the whole of their p

and drawings passed into the possession of Messrs. Manlove, and Company, Limited, who also secured the assistance of their m to enable them to develop this new branch of their business.

Amongst many other forms of mills produced at Bloomsgro which are suited for treating the most varied materials, should b tioned the Gibbs Roller Mill, which is specially adapted to the c and reducing to fine powder of hard materials, such as minera phates, quartz, ganister, and the like. For these purposes, a many others, the roller mill is found to be a great impovement o old-fashioned mill-stone method, and the special arrangemer nected with this mill permit the material to be ground readily degree of fineness required, while the rollers themselves are no to rapid wear, and even when slightly worn they may readily and be put in working condition again.

Messrs. Meldrum Brothers.

THIS business was established by Mr. James Meldrum to steam-jet apparatus of an improved and very simple f which he was the inventor and patentee, consisting of blowers producers, puddling, and mill furnaces; air compressors, cap compressing up to 25lbs. per square inch; vacuum pumps, a oxidizers, acid and water lifters, etc., all of which have met w considerable success in gas, chemical, and other works.

These various appliances are all modifications of the principle well-known Giffard injectors, and as they have been carefully out upon scientific lines, embodying the results of some hund experiments, may be said to approach very nearly to perfectio main objects kept in view are efficiency, economy of pow simplicity of construction, so as to avoid any possibility of ment. *Apropos* of the question of economy, we heard lately firm in the north who carefully tested the Meldrum blowers for furnaces, against those of various other makes, and who state economy of the blowers over all the others amounted to 86% other words, the Meldrum blowers used less than one-seventh steam required to actuate the others while doing exactly t work.

Few people have any adequate idea of the capabilities of a g economical jet apparatus, and those who have any work whe jets could be suitably employed, will do well to give the matt careful consideration before erecting other costly and con plant. Some three years ago, the business having very m developed, Mr. Fred. Meldrum was taken into partnership, firm has since been known as Meldrum Bros. About the sa the firm introduced their patent dust-fuel furnace to gas engin arrangement of forced draught for burning coke dust, coal d other fuels of low calorific value or poor quality. Having be fully tested by Mr. T. Holgate, Mr. J. Hepworth and Mr the Halifax, Carlisle, and Bolton gas works respectively, the was permanently fitted to all the boilers at these works. quickly followed, and now the furnace is to be found at mos principal gas works in the kingdom.

emical works, collieries, and many others have largely adopted system; and we believe that during the last few months over 300 furnaces have been erected, saving in many cases the whole cost fuel—refuse being burnt that formerly had to be carted away. sands of tons of coal are now being annually saved by this means, we know of firms that have effected in this way an economy of £1,000. a year. Again, Mr. George Tooley, manager of the low Lane Gas Works of the Leeds Corporation, recently reported for a total outlay of £105. in Meldrum dust-fuel furnaces, the al saving in fuel was about £600.

e give below a front view of a Lancashire boiler fitted with this ace. It will be seen that the whole apparatus is enclosed within lines of the boiler, so that there are no unsightly projections, and ing to interfere with the firemen in the discharge of their duties.

The patent blowers project under the grate bars, and deliver air from half an inch, and an inch and a half or two inches water-sure, according to circumstances. The small proportion of steam mixes with the air, and this serves to keep the bars cool, so that, consequence, the clinkers do not stick, the work of cleaning the fire-being thereby greatly reduced, and the bars last very much longer; fact, we understand that in the furnaces first fitted the bars are now tically as good as when they were first put in after three years ; this in itself represents a considerable saving.

n cases of poor draught, this apparatus will be found very antageous, and when it is necessary to get an increased efficiency a boiler, the blowers will be found invaluable.

Messrs. Doulton and Company.

ESTABLISHED 1834.

THE products of Messrs. Doulton and Co.'s various works in London, Staffordshire, and Lancashire comprise a very wide of pottery manufacture, ranging from bricks and drain-pipes to choicest of art wares.

The Lambeth Pottery when first established consisted of about ive persons working two kilns per week. The subsequent steps ich were taken, slow at first though sure, and increasing rapidly ng the last fifty years, have led to the results of recent times, so in the Lambeth works alone about two thousand persons are now loyed, while the number engaged at the whole of Messrs. Doulton's blishments is nearly four thousand.

Amongst the productions of the Lambeth Pottery, stoneware goods doubtless of the most importance. Besides bottles, jars, jugs, and riety of similar articles are included chemical vessels of stoneware, lible of resisting acids. In addition to the patterns which are in general use, Messrs. Doulton and Co. undertake the manufacture of stoneware chemical apparatus designed for special purposes. Great improvements have been made by this firm in their stoneware force pumps for acids, etc., and the pump now made is a great advance on anything hitherto offered, being the outcome of many years' practical experience. Mention may also be made of the vitrified enamelled stoneware troughs and sinks adapted for laboratories, photographic studios, etc., as also of telegraphic insulators, battery jars, etc.

In 1846, Messrs. Doulton and Co. commenced the manufacture, which has since developed into a most important industry, of stoneware drainage pipes; and at the present time they make at their various works from twenty-five to thirty miles of pipes weekly, involving a consumption of clay of about two thousand tons per week. They are also large manufacturers of water filters, including main-service, household and portable filters; the filtering medium employed being manganous carbon. Filters of special construction are made to meet the requirements of water-works, bleaching and dye works, breweries, etc.

Plumbago and fireclay crucibles for brass, iron, and steel form an important branch of manufacture at the Lambeth Works.

Quite distinct from the above mentioned utilitarian goods is the art pottery, for the production of which Messrs. Doulton and Co. have attained such a world-wide reputation. Doulton-ware was first introduced in 1867. Since that time no exertion has been spared in its development; and constant perseverance has secured a range of colour entirely unequalled in stoneware at any previous time. Besides Doulton-ware, Lambeth Faience and numerous other wares of great beauty are produced at the Lambeth Pottery.

Messrs. Doulton and Co. manufacture terra-cotta both at Lambeth and Staffordshire, and also glazed terra-cotta in various colours for internal and external decoration. In this latter material fireplaces and stoves in great variety are produced. These are cleanly and of

ornamental appearance, and the new designs in gas and oil stoves in glazed pottery are worthy of special notice.

As well as being manufacturers of pottery this firm as sanitary engineers, also make at their sanitary engineering works, Lambeth, Paisley, and Paris, all the brass and other metal work required in connection with their fitted sanitary appliances.

Messrs. Doulton and Co.'s works at Burslem are devoted to the manufacture of china, including art ware of the highest class. A specimen of their excellent productions being illustrated by the wood cut of a vase in silicon ware (perforated) shown above.

Messrs. Whittaker and Co.

ESTABLISHED 1783.

THE firm of Whittaker and Co. has for many years been recognised as one of the chief publishing houses for standard educational and classical works. Recently it has caught the spirit of the time, and has devoted its efforts to the production of reliable works upon scientific and technological subjects, the accompanying woodcut being familiar doubtless, to most of those conversant with chemical bibliography.

Foremost amongst the productions emanating from this firm may be mentioned a large number of works upon electricity in its application to various industries. Such works as Gisbert Kapp's "Electrical Transmission of Energy," W. H. Preece's "Telephones," Professor Lodge's "Lightning Conductors and Guards," now in the press, and many others which have or will shortly attain the position of standard works. Amongst their volumes specially interesting to chemists are the new edition of the "Alkali Makers' Handbook," by Dr. Lunge and Dr. Hurter; Professor Beaumont's "Colour in Woven Design;" "The Chemistry of Coal-tar Colours," by Drs. Benedikt and Knecht; "Dyeing and Tissue Printing," by W. Crookes, F.R.S.; "Glass-making," by Messrs. Powell, Chance, and Harris; Dr. Griffith's "Treatise on Manures;" Blair's "Chemical Analysis of Iron;" "The Electro-Platers' Handbook," by G. E. Bonney, besides which, works upon "Soapmaking," by W. Gadd, F.C.S., F.I.C.; "Chemistry," by T. Bolas, F.C.S., F.I.C.; "The Chemistry of Photography," and a new text-book by Professor Arnold, of the Sheffield Technical School, on the "Analysis of Iron and Steel," written from a practical rather than from an academic stand-point, will suffice to show that the firm is endeavouring to do away with the reproach often, though probably unjustifiably, urged that the English nation is unable to compete in such works with the Continental countries.

In conclusion, it may be said that the firm is anxious to add to its list, works which are likely to be of practical utility to students of chemistry and other branches of physical science within their scope, the extent of which will be obvious to any one who will apply for and examine their more recent lists.

Messrs. Robert Daglish and Co., St. Helens Foundry Lancashire.

ESTABLISHED 1798.

THESE old established works, which cover an area of 25,000 square yards, are complete with every convenience for the rapid transport by rail or canal of their commodities, and their extensive foundry, fitting, turning, and erecting shops are replete with the most modern machines. The principal specialities are chemical plant, soap machinery, machinery for fluted and cathedral glass; the most modern machinery for grinding, smoothing, and polishing plate glass; winding, hauling, air-compressing, and blowing engines, and patent silent guibal fans, for any water gauge and capacity; pumping engines for main water supply, mines, drainage, irrigation, etc. This firm also contracts for complete

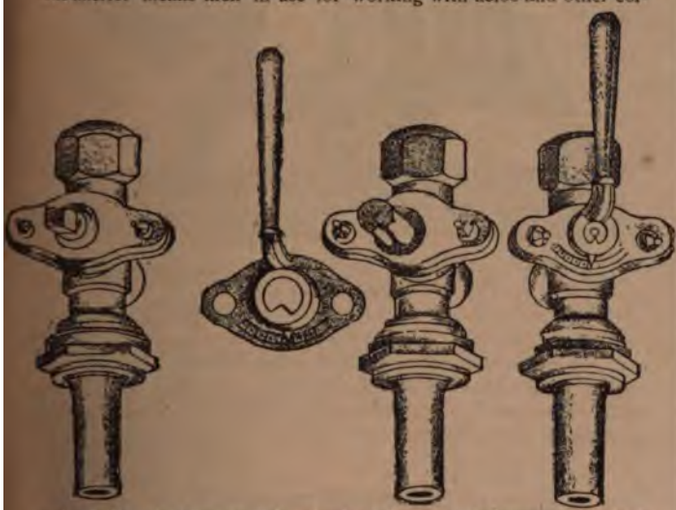
ST HELENS FOUNDRY, LANCASHIRE.

plants, either at home or abroad, for the manufacture of caustic soda, bleaching powder, by the Weldon process; soap and other commodities; customers getting the advantage of their long practical experience in these matters. A speciality also is made of the various kinds of cast-iron pans and stills, such as salt cake, caustic, pearl ash, potash, sulphur, and iodine pans; oil, tar, salammoniac, and rosin stills, which are made of a special mixture of metal; also large numbers of evaporating pans and stills are manufactured in the highest qualities of wrought iron and steel, and mechanical fishing pans. They have also erected upwards of 70 revolving furnaces as used in the manufacture of caustic soda, soda ash, in calcining copper and other ores and cement; and have lately taken up the patent of Messrs. Brock and Minton for the manufacture of their patent Revolving Filter Presses, many of which have been made for this country and America. The style of these filter presses is entirely novel, and invites special attention. The presses are cylindrical, 4ft. diameter by 9ft. long, and revolve on trunnions at each end, the liquid to be filtered being pumped in by a pair of improved high pressure differential pumping engines, which are arranged so that by turning a tap either a medium or a very high

pressure can be applied to the contents of the press. As the press revolves the solid matter forms round the shell, and the liquid is forced through the protected gauzes, which are attached to the shell, the pressure gradually rising as the cake thickens; this is continued until the press is entirely or nearly full of solid material, and the pumps are then stopped. With a view to explaining the emptying process, we may mention that the press is constructed of steel, and the joint is parallel along the cylinder, one side being fastened by a patent knuckle joint, and the other by means of bolts or cramps, these are released and the top half of the cylinder is lifted off, the press revolved half round, when the solid material falls out. One of these presses contains when full from 2¼ to 3 tons, depending on the nature of the material filtered; but smaller presses can be made.

Mr. J. Cortin, Newcastle-on-Tyne.

THIS large business was established thirty years ago by the late Mr. Joseph Cortin, a practical house and chemical plumber, who commenced business after his calling in a small building at Mushroom Quay. The then flourishing state of the chemical trade in the Tyne district called Mr. Cortin's services into constant requisition, and he largely increased his knowledge of the requirements of that trade, in the interests of which his utmost endeavours had ever been employed. The inferior means then in use for working with acids and other cor-



rosive fluids, also the great drawback of there not being a metal which could withstand in a satisfactory manner the action thereof, led Mr. Cortin to make the latter a special study; and after a lengthened period of much thought and experiment, also at great expense, he succeeded in finding out a mixture of metals, which not only answered the purpose for which it was then intended, but has retained its supremacy over all other alloys for acid resisting even to the present time. The value of this most important discovery soon became apparent by the overwhelming increase in the number of orders received, not only from local firms, but also from firms in various parts of the United Kingdom, who had been made aware of the merits of the "Cortin Regulus Metal." Thus a business was established which has ever been increasing, and the premises and plant have had from time to time to be enlarged and increased, until at last new and more commodious premises had to be acquired. Small chemical plant making and brass founding are the staple elements of the business now carried on. The principal specialities being valves for use instead of cocks; acid egg valves, regulus metal cocks, regulus metal cocks with stoneware plugs, acid injectors, screw down plugs and seats, for acid cisterns, hand plugs and seats, for chambers, screw down plugs and seats, for railway tanks, improved regulus and brass supply and exhaust air cocks, improved index handle chamber cocks (which we illustrate), air pumps and gas generators for lead-burning, etc., etc.

The most important specialité in the above mentioned, and which is the invention of Mr. William T. Cortin, is the patent non-rotative acid valve, which has been devised to fulfil a want long felt by chemical manufacturers and others of a safe, durable, and efficient means for stopping or regulating the flow of acids, or other corrosive fluids, air, gases, etc. The unsatisfactory method of cocks, and other ordinary means hitherto employed, having many drawbacks, comprising—plugs, lifting and flying out, scalding attendants, causing accidents, loss of liquids, etc; also the great wear by friction on the soft metals, causing them to leak and to become useless, thus necessitating frequent stoppages in the works and consequently great expense, by having to be renewed and replaced by others at short intervals—afford sufficient reasons for an improvement being made.

This valve, by its special construction, entirely overcomes and does away with all the aforesaid disadvantages and defects.

The body and valve being made in Cortin's own special mixture of regulus withstands the action of acids or other corrosive fluids for a very much longer period than any other known alloy. Also, the valve or plug being non-rotative, falling or rising into or out of a mitred seating without turning round, is exempted from friction in working, the wear and tear being thus reduced to the smallest possible minimum. By its use, immunity from accidents, stoppages in the works, and all other drawbacks is fully attained.

One of these valves will last longer than the combined lives of a very large number of any of the old or ordinary valves, and when once fixed in place will last for a number of years. It cannot get out of order, there being no complications about it whatever.

Most of the leading chemical firms have adopted this valve, and all testify to its good merits as being the only safe, practical, and also inexpensive valve yet invented for its purpose, being principally used in sulphuric and other acid works.

Messrs. C. Pass and Sons.

AT these old established works situated near Bristol, various metallic drosses, refuse, and ores are treated metallurgically, the resulting products being metals and alloys for use in the arts.

Waste materials and by-products resulting from manufacturing and chemical processes are sent to these works from all parts of the United Kingdom, from the Continent of Europe, from America, and from Australia. Amongst these products may be enumerated waste from:—

LEAD ROLLING MILLS AND LEAD PIPE MANUFACTORIES:—
Lead ashes and lead slags.

From LEAD SMELTING WORKS:—
Hard antimonial lead and copper matte.

From WHITE LEAD WORKS:—
Refuse and slags.

From TIN PLATE WORKS:—
Tin ashes and terne ashes.

From BRASS FOUNDING AND ENGINEERING WORKS:—
Brass ashes, turnings, etc.

From CHEMICAL WORKS:—
Sulphate of lead and other residual products.

Various alloys and compound metals containing tin, copper, lead, antimony, etc., valueless for direct use in manufacturing, are here separated into their component metals and thus restored to circulation. Mineral products such as complex ores containing mixtures of copper, antimony, or lead; also impure tin ores are some of the many substances treated at these works.

The principal products resulting from treating these materials are:—

Soft pig lead known by its brand "BEDMINSTER."

Type founders' or stereotypers' metal.

Metal in ingots recognised by its brand which we reproduce.

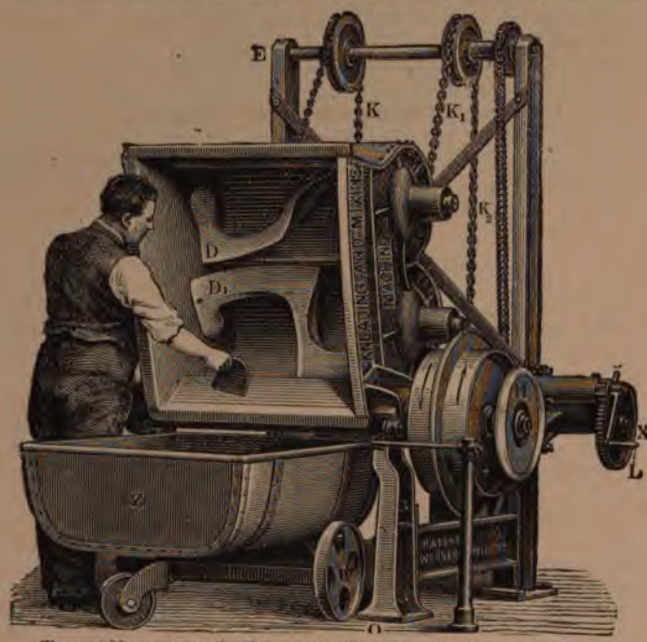
Solder in ingots.

Ingot copper for casting purposes.

All of which are well known in the market, and appreciated for their uniform quality and general excellence.

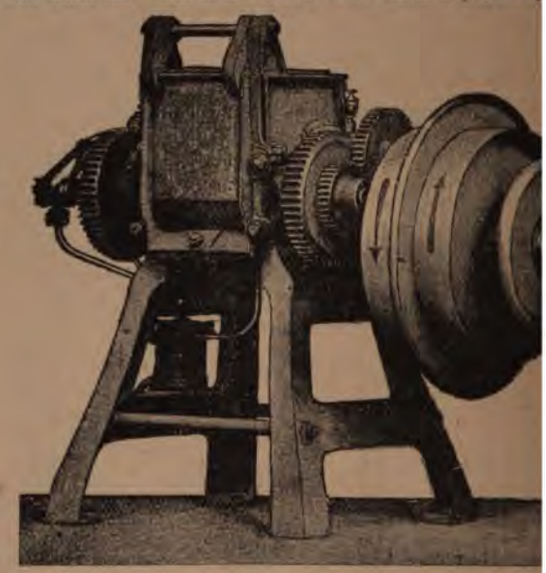
Messrs. Werner and Pfleiderer, Engineers, &c.

THE radical improvements that have made their way so acceptably into the methods and practices of the bakers' trade are some of the most notable indications of our modern advancement, and few have done so much within the last twelve or thirteen years to encourage such improvements as the firm whose title heads this brief review. Messrs. Werner and Pfleiderer's labour-saving machinery for the use of bakers and confectioners has a world-wide reputation, and its great general merits and advantages have exercised a most powerful influence in securing a widespread adoption of mechanical aid in all the varied processes of a business in which such aid is most desirable. Absolute purity in the bread and confectionery we eat is a consummation devoutly to be desired, and such a desideratum can only be attained by the use of apparatus supplied by those manufacturers who have made the production of bread-making machinery a profound study and an industrial speciality. Among such manufacturers Messrs. Werner and Pfleiderer, of London, Paris, and Cannstatt, hold a position of enviable distinction. This house was founded at London in 1875 by the two



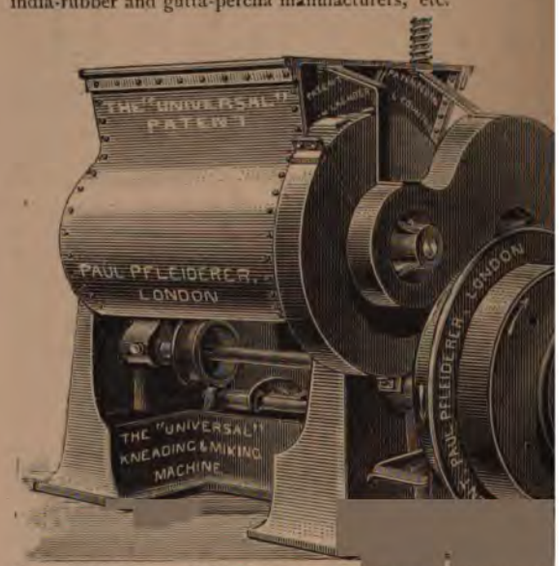
THE "UNIVERSAL," TYPE VII., TILTED, FOR DISCHARGING CONTENTS.

principals whose names appear in its title, and the business thus established was at first confined to bakers' machinery. Gradually, however, the scope of the firm's operations has been expanded, and from the manufacture of the one apparatus a large and comprehensive engineering business has grown up, Messrs. Werner and Pfleiderer now undertaking the complete equipment of plant for hand or power bakery, pharmaceutical laboratory, paint, putty, and india-rubber manufacture. The three principal branches engaged in by the firm embrace the construction and supplying machinery for (1) bread and biscuit baking; (2) paint and putty manufacture; (3) pharmaceutical chemistry. The original machine that formed the nucleus around which such an extensive system has developed is the "Universal" kneading and mixing machine, an apparatus known to-day in all quarters of the globe, and one that is as simple as it is efficient. It requires no apprenticeship in the handling or working, and its two main features—amply sufficient to achieve success—consist in the mixing and tilting principles it embodies. The former is carried out to perfection by two curved blades, which revolve inside the pan at different speeds, thoroughly mixing and kneading the material operated upon, and when the desired condition has been obtained the second principle—the tilting—shows itself in all its commendable simplicity. The pan mechanically tilts either upon the axis of the driving shaft or of the mixing blade, and in some machines is tilted and returns to its original position by pressure of the workman's foot upon a lever. It is doubtless o most efficient and easily operated machines of the kind m Messrs. Werner and Pfleiderer produce it in all sizes from a apparatus worked by hand to a large engine capable of man five sacks of flour at one time. The same principles, in modifi cations, have been brought into effect in a variety of machine in all industries where kneading, mixing, masticating, malax incorporation of materials is required. The thoroughness and with which the "Universal" does its work makes it peculiarly



THE "UNIVERSAL" TYPE IV. (STEAM-HEATING), FOR MAS INDIA-RUBBER, ETC.

to such fine operations as the mixing of powders or pharm preparations, and it is equally serviceable for the paint, prin and putty manufacturer. Various other branches of m engineering are prosecuted by this firm, who have been very in the production of quick working and highly effective masti india-rubber and gutta-percha manufacturers, etc.



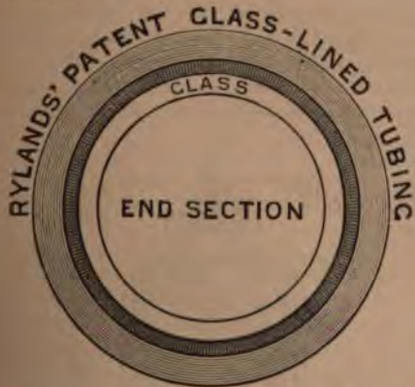
THE "UNIVERSAL" TYPE VI. AS USED BY CHEMISTS, PA COLOUR MANUFACTURERS, ETC.

All the specialities of the house are patented here and alo have won no fewer than thirty-five medals and diplomas, many highest awards.

The machines made by Messrs. Werner and Pfleiderer are in use by leading manufacturers in all parts of London, the provinces, and throughout the world, and the firm refer with confidence to all their clients in proof of the great satisfaction their apparatus have given. The London depôt is under the personal supervision of Mr. Paul Pfleiderer, the resident partner, who has made a study of the class of machinery specialised by his house, and whose thorough knowledge of their requirements has won for him the confidence of all customers of the firm. At Cannstatt the house has very extensive works, and these are under the management of Mr. Werner, who is also a thoroughly practical man, well versed in every detail of the industry.

Messrs. Dan Rylands, Limited, Barnsley, England.

ONE of the most valuable inventions of recent years is now being manufactured by the firm whose name appears at the head of this notice. We refer to Rylands's patent glass-lined tubing. The construction of this tubing is quite simple, its application world-wide, and its introduction into the market is nothing less than a boon to many industries. This patent glass-lined tubing consists internally of a distinct glass tube, which is covered and protected externally by ordinary iron or other metal tubing, a suitable cement inserted between the glass and iron making the whole homogeneous, and at the same time rendering this patent tubing practically unbreakable by ordinary use. Not only has this been accomplished in straight tubing, but by the patent process of which Dan Rylands, Limited, are now the sole owners, all tee-pieces, bends, elbows, and crosses are similarly manufactured with this internal glass lining, so that no portion is left unprotected. Rylands's patent glass-lined tubing can be supplied with the external pipe either of cast or wrought iron, copper or other metal, and with either butt, flange, or socket joints. By any of these means the tubing is easily coupled together. In every case a thin washer of gutta-percha or other suitable packing is interposed between the pipe ends, to secure a perfectly sealed joint when the pipes are screwed up. The principle of the invention will be at once apparent from the illustration here given.



Probably the prevention of lead poisoning in water service pipes was primarily in the mind of the inventor of this glass-lined tubing; but it was soon evident that the practical value of the invention rendered it applicable to numerous other purposes. The essential and absolute purity of glass for conveying all kinds of liquids, and the effectual and safe protection of the internal glass tube by the intermediate composition and the external metal casing seems to render the invention perfect. Its value to the chemical trade needs no comment, and we have no doubt our readers will readily recognise the innumerable purposes to which it may be applied. Among these we may mention, however, that Rylands's patent glass-lined tubing is easily adapted for conveying sulphuric acid from the acid egg to the elevated cisterns at the top of the Gay-Lussac and Glover towers; in this case the pipe which enters the egg is made entirely of glass, and the end of this glass tube outside the egg is connected to the glass-lined piping. The advantages of this patent tubing will also be obvious in conveying muriatic acid gas from the salt-cake furnaces to the condensing towers; for this purpose it is far superior to earthenware tubes, and is free from the danger and disadvantage of the breakages of unprotected glass tubes. There is also the additional recommendation in the fact that when once the piping is put together there is then no difficulty with the joints. The glass is suitably annealed for bearing varying temperatures, and this tubing can also be adapted for facilitating the cooling of the muriatic acid gas passing through the same. This glass-lined tubing in the form of condensing coils is seen to great advantage as compared with the stone-ware Woulfe's bottle. As a steam shaft for the chlorine still, it is superior to any other. In the latter case the tube is made extra strong to resist the ordinary working pressure of 50lbs. to the square inch, and it has the advantage of not being so easily broken as ebonite. The uses to which this glass-lined tubing may be applied in chemical works are really innumerable, those named above being merely typical examples. This tubing has already been adopted for running muriatic and other acids. It is equally suitable for conveying chlorine gas from the stills to the bleaching powder chambers, and is specially suitable in running solutions from one cistern to another in dye, bleaching, paper-making, calico-printing, and other works; while it is of great advantage where reagents are affected by being brought into contact with metallic surfaces. Undoubtedly, Rylands's patent glass-lined tubing has a great future before it.

The Lydbrook Chemical Company.

THE Lydbrook and Oakwood Chemical Works are situated in the Forest of Dean, in the centre of about 40 square miles of oak trees; they were erected about 45 years since for the purpose of carbonising wood in retorts, and supplying the residual charcoal to the iron works.

The vapour from the carbonised wood is condensed into crude pyroligneous acid. Next, the alcohol or spirit from the wood is removed from the crude acid by distillation, and after refining, the "Solvent" wood spirit is obtained; or if the "Miscible" naphtha is desired, the spirit is previously mixed with lime.

The wood acid is also mixed with lime which takes up the acid, so that after evaporating the water and drying, the commercial brown acetate of lime is produced. Wood tar is also made by this firm.

When charcoal was no longer used in the district, the system of carbonisation was altered, and a charcoal of a superior quality was made, also new and improved machinery was erected, to grind large quantities of charcoal to various degrees of fineness, a good market being found for this commodity. It is now used for filtering purposes, by iron and brass founders; for an imitation lampblack; and many other purposes where a pure impalpable charcoal powder is required.

Solvent wood spirit has always been made at the Lydbrook works, and the quality is well known; it dissolves the hardest gums, and is employed for the manufacture of the finest varnishes. It is guaranteed free from any mixture of cheap methylated spirit, and thus buyers can temper it to suit their inferior requirements.

Miscible naphtha is made at the Oakwood Works; the methylators mix it with coarse spirit, under the supervision of the Excise, and the mixture is sold as methylated spirit.

Large quantities of miscible naphtha are imported from the Continent, as well as coarse spirit, and both the makers of miscible naphtha and coarse spirits feel that the Customs and Excise not only favour the foreigner, but handicap the British producer, although they actually see the goods being made and know that the product is genuine.

The great market for acetate of lime is the Manchester district, where it is largely used by the makers of acetic acid for the dyeing industry, the manufacture of acetate of lead and soda, etc. The United States has proved a formidable opponent in production of acetate of lime however, and during the last twenty years more than one-half of the wood distilling works have been compelled to close, about two-thirds of the home trade having gone abroad. The following are some of the reasons for this disastrous state of affairs :—

1. Wood is scarce and dear in England.

2. The tariffs of foreigners enable them to manipulate our markets, and they form rings to do so.

3. Many of the leading statesmen of this country appear to be ignorant of the principles of commerce and deficient in business knowledge.

4. Excessive railway rates; in England the goods traffic has to pay for the losses on the competitive express service.

5. English buyers give a higher price for foreign goods, knowing that the home producer must sell to them, being kept out of all foreign markets by hostile tariffs.

Mr. G. G. Blackwell.

ESTABLISHED 1869.

THE origin and growth of the well-known works of Mr. G. G. Blackwell will doubtless afford interest to all those who appreciate enterprise, and have any knowledge of the labour entailed in the development of a business.

The works now occupied, which are represented in the illustration given below, were originally built for the Garston Chemical Company, Limited, and were about twenty years ago acquired upon lease by Mr. Blackwell, who put up grinding machinery, more particularly for grinding manganese. With the advance of trade, this plant began to prove inefficient and too slow, so a special plant was devised and erected for preparing manganese both by the wet and dry methods, for use in the various trades in which it was then becoming, and has now become, such a useful and important factor.

The convenience of these works owing to their close proximity to Garston Dock, which is practically *the* mineral dock of the world, led to the purchase of the freehold; at the same time the grinding machinery being still further extended in order to prosecute the grinding of barytes, lime, fluor, and felspars, oxides of iron, etc.

Owing to the rapid advances made in the application of electricity and the consequent demand for specially prepared manganese, aglomerate blocks, and carbon plates, further special plant has been added, enabling large quantities of these commodities to be supplied at short notice, instancing thereby the enterprise with which these works are managed.

As a result Blackwell's prepared manganese, for the use manufacturers, electricians, etc., is well known everywhere manganese, for the chemical and steel trades, imported from al and produced at the mines in North Wales, is universally famili

Amongst the other specialities produced at the Garston Works, the most noteworthy are French chalk and bauxite.

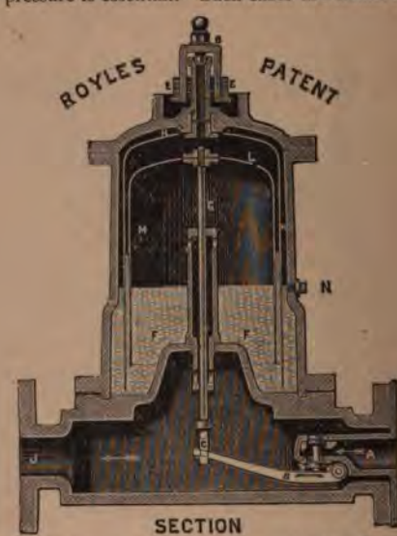
The well-known brand which we illustrate is produced at t Hill Mines, near Belfast. These mines were amongst, if not to produce bauxite, and have been worked now for upwards o years, yielding a fine bauxite containing 50% of alumina an iron. The extensive use of this mineral in chemical works manufacture of alum, sulphate of aluminium, to say nothing o as a refractory lining and flux in the treatment of phosphoric the blast furnace, is of itself sufficient testimony to the import this industry.

In the matter of French chalk, the whole of the French together with three of the largest Italian mines, which prod purest and most superfine qualities, are under the sole control Blackwell, who is thus not only the oldest, but the largest imp this article, which is now so extensively used.

The production of these works is not confined to specialitie however, the following minerals including chrome ore, m emery, sulphate and carbonate of barytes, bog ore for gas puri etc., are also produced, showing that the reputation enjoyed Garston Mineral and Manganese Works is justly merited.

Mr. John J. Royle.

MR. ROYLE is engaged in the manufacture of a great of patented inventions, some of which possess a interest for the readers of the *Chemical Trade Journal*, su patent steam traps and reducing valves. The importance of accurate reducing valve cannot be over-stated where regularity perature, or pressure is essential. Such cases are numerous.



SECTION

describe the way the want has been met by Mr. Royle, a serve to illustrate the quality of the inventions turned out at in Great Bridgewater-street, Manchester. It is not easy to g a rut and strike an entirely new system as Mr. Royle did in Those who know the general construction of a reducing valv objectionable parts and want of accuracy will appreciate it.

1. The rotary centre screw (which saves space and labour).
2. The angle lever shutting arrangement (which enables one man to effectually shut the largest press against a pressure of 10 atmospheres).
3. The thorough extraction (by means of which every trace of soluble matter can be washed out of the cakes).

In order to obtain the largest possible filtering surface in the smallest given space, the channels, through which the filling and ultimate washing or extraction of cakes takes place, are situated outside the actual plates in specially attached flaps, so as not to take away any available filtering surface.

The filtered liquor runs out through taps or pipes at each chamber, or through an efflux channel. The former arrangement has this advantage: that each chamber separately may be controlled, and if running turbid put out of action without stoppage of the whole press.

The filtercloth in the frame presses is simply hung over the plates, no fixing being required, as all channels are situated outside.

The cloth in chamber press is hung over and fixed round the feed channel by a union screw. The cheaper and almost obsolete arrangement, of pulling one part of the cloth through the feed hole, which wastes a great deal of labour, and filter cloth is only made in the cheaper and lighter constructions of Dehne's presses.

For the purposes of experimental investigation in the laboratory, Dehne supplies, at very little cost, an excellently finished experimental press, possessing all the improvements of the large ones, so that they are proportionally efficient and will be found a very useful adjunct to the laboratory of the chemical engineer.

Mr. J. F. Stead, Leeds.

Established 1855.

THIS business was originally commenced at a comparatively small mill where rooms and power were rented. This accommodation soon proved too small for Mr. Stead's rapidly increasing trade, consequently a few years later he built the well-arranged manufacturing premises in Skinner-lane, to which he removed his machinery in 1864. In 1878, to make room for new machinery, the works were enlarged to the size shown in the woodcut, and they now occupy a floor space of about 2,000 square yards.

Nearly 100 hands are employed in the various processes of winding, twisting, warping, weaving, and finishing, the works being fully equipped for the complete manufacture and finishing of all classes of cloths, etc., which vary in width from 5 inches to 114 inches.

Amongst the numerous specialities produced for various purposes, we may mention the manufacture of press and filtering cloths in cotton, linen, worsted and woollen, both in single width and tubular form. For these they have a large home and foreign trade amongst chemical manufacturers, tar distillers, seed crushers, earthenware manufacturers, and sugar refiners.

Messrs. John Riley and Sons.

Established 1844.

THIS business is now carried on under the above style. The works are situated near Accrington, where the manufacture of the general products consumed by paper makers, bleachers, calico printers, dyers, and others is carried out, amongst which products may be enumerated soda crystals, refined soda ash, bleaching powder and liquor, caustic soda, etc., all of which are well known by the distinctive eagle trade mark shown in the accompanying cut.

One of the branches of the chemical industry to which this firm has given something more than ordinary attention is the manufacture of sulphuric acid, every care being taken to obtain acid of a high quality. In order to accomplish this end, the rectification of the vitriol is not carried out in glass alembics, but platinum vessels are employed, thereby effecting a purification and safeguard rom contamination as high as can be attained to.

For the last two years also the recovery of sulphur from alkali waste by means of the Chance process has been carried on at these works, the firm making a speciality of roll and flower brimstone, both being perfectly pure. With the exception of the foregoing, the products made at the Hapton Chemical Works are too well known to call for further comment.

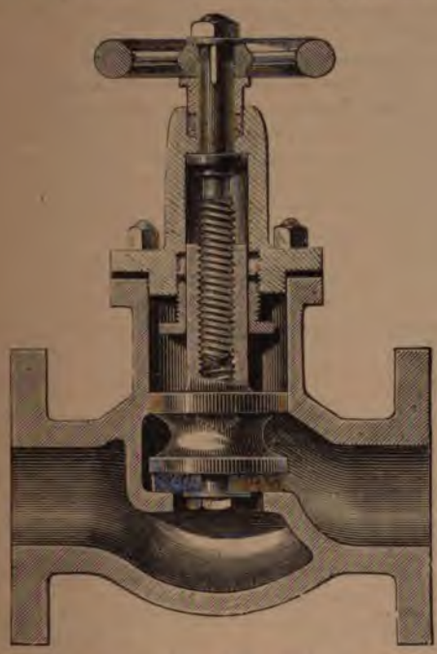
Messrs. B. Rhodes and Son.

THIS flourishing business dates back in its foundation over 25 years, and there are few firms that have been more intimately associated with the progress and development of their branch of the engineering trade.

The works, known as the Bow Brass Works, London, are extensive and commodious, being replete in every department with all the most improved machinery for effecting economy in production and securing perfect and uniform workmanship.

The firm is well employed in every branch of the business, manufacturing in large quantities the various fittings for steam boilers and other purposes, as valves, cocks, and boiler mountings. In the construction of these Messrs. Rhodes and Sons have made many important and valuable improvements.

Prominent among these may be mentioned Rhodes' patent renewable seated valves for steam, water, etc.; Rhodes' patent renewable seated acid valves represented in the woodcut; Rhodes' patent renewable seated water gauge fittings. The most important feature in these valves is, that the patent seating can be renewed at will without removing the body of the valve or breaking the pipe joints.



They are practically everlasting. These valves are now in universal use, and enjoy an excellent reputation. One of the best proofs of their utility and popularity is the ever-increasing demand upon the firm for their production.

Rhodes' patent asbestos composition sheeting for steam, and acid, joints is well known to the trade as a thoroughly reliable material for the purpose. It is used on all the English and many foreign railways, and in chemical works, breweries, distilleries, etc. The firm has long been noted for the production of sound castings in brass, gun metal, copper, etc.; also in special alloys for chemical purposes. The business connections of the firm are of a steadily growing character, being founded upon the sound and reliable character of all the work turned out of this establishment.

Messrs. Howarth and Co.

ESTABLISHED 1854.

THE works of this firm were established at Miles Platting for the manufacture of brown and rectified sulphuric acid, saltcake, and hydrochloric acid; the business has been extended, and other chemicals and drysalteries are now supplied, but the products already named are the specialities of the firm.

All the sulphuric acid made is free from arsenic, and great attention is paid to the strength of the finished vitriol, which is found to be especially suited for mineral water makers and all users to whom purity of strength are essential.

The acid is used for the decomposition of salt in the manufacture of saltcake, the resulting hydrochloric acid is likewise free from arsenic, and may therefore be used with every confidence by wire drawers and other manufacturers, whose work would be damaged by using a common hydrochloric acid containing arsenic.

The saltcake manufactured by this firm is intended to be specially suited to glass manufacturers on account of its purity, a characteristic feature in the products made by Messrs. Howarth and Co.

Messrs. Lloyd and Lloyd.

ESTABLISHED 1858.

IT would be difficult to say what becomes of the vast quantities of iron and steel tubes made annually in the Birmingham and South Staffordshire district. A tube is a commodity neither soon worn out nor subject to the changes of fashion, and yet the output every year is steadily increasing. Such, at least, is the experience of the well-known firm of Lloyd and Lloyd, of the Albion Tube Works, Birmingham and Halesowen, who, since the founding of their business, have established a reputation second to none for the excellence of their manufactures, among which may be noted black and galvanised tubes and fittings for gas, steam, water, and compressed air; iron and steel tubes for locomotive, marine, and stationary boilers; Field's patent boiler tubes; well tubes with either swelled or flush joints, screwed sockets or internal nipples; driving caps and shoes; Abyssinian well tubes and driving points; hydraulic tubes for all pressures; tubes fittings for the "Perkins" system of hot-water heating, and "Sprinkler" tubes for patent automatic fire extinguishers, in both of which classes of tube there is a large and continually increasing demand; tubes for point rods and railway signalling; tubes up to 4 ft. diameter, welded by their own patent process, all of which are familiar through the well-known trade mark shewn in the cut below:—

L&L TUBES

Light riveted pipes, now substituted for cast iron in many cases, as they "nest" in shipment, and thus effect a large saving in freight and transport; welded gas reservoirs for railway carriage and tramcar lighting, compressed air cylinders, oxygen bottles, etc. The firm have recently acquired the sole patent rights of the Bernardos-Howard system of electric welding, a process from which striking developments in the manipulation of iron, steel, brass, and other metals are confidently anticipated; numbers of special fittings incapable of production by ordinary welding having, in fact, already been turned out. Among their specialities for chemical works are tubes and fittings enamelled inside and out, and glass-lined for the conveyance of acids; and coils for heating, condensing, and refrigerating. One works is exclusively devoted to coil making, their appliances enabling them to wind any length of tube from a few to several hundreds of feet in a single length, and to any shape or section required. Their

various works are exceptionally well arranged, and cover an area of several acres. The firm stock immense quantities of tubes and fittings of all sizes, and are consequently enabled to execute orders with the greatest promptitude, special precautions being invariably taken to prevent inferior or defective work passing into the warehouses, for which purpose gangs of men are continually employed solely for the purpose of examining and testing every article coming

from the mills. Messrs. Lloyd and Lloyd have gained the silver medal, Paris, 1867; special first award, Sydney, 1879; first award, Melbourne, 1880; and gold medal, Adelaide, 1881.

Mr. W. M. Fuller, Junr.

BONE meal has been one of the staple manures employed for the purpose of artificial fertilization for some years now, and necessarily, the apparatus and machinery employed in its production has become more perfect in proportion to the increase of the demand for this article. The illustration below represents a complete bone steaming, grinding, and sieving plant as supplied by Mr. W. M. Fuller, junr., of 88, Great Charles-street, Birmingham, to most of the centres of the bone industry in all parts of the world, including India, Russia, West Indies, Japan, and the United Kingdom.

The above plant is designed to produce 20 tons of finished meal per ten hours.

The steamers or digesters are made of cast iron in one piece, and fitted with strong wrought iron lids, with steel eye bolts, chains, balance balls, and brass fittings. They are, virtually, beyond the reach of wear and tear, and are in every way superior to wrought iron vessels which are subject to continual trouble from leakage, on account of the greasy liquor eating away the rivets.

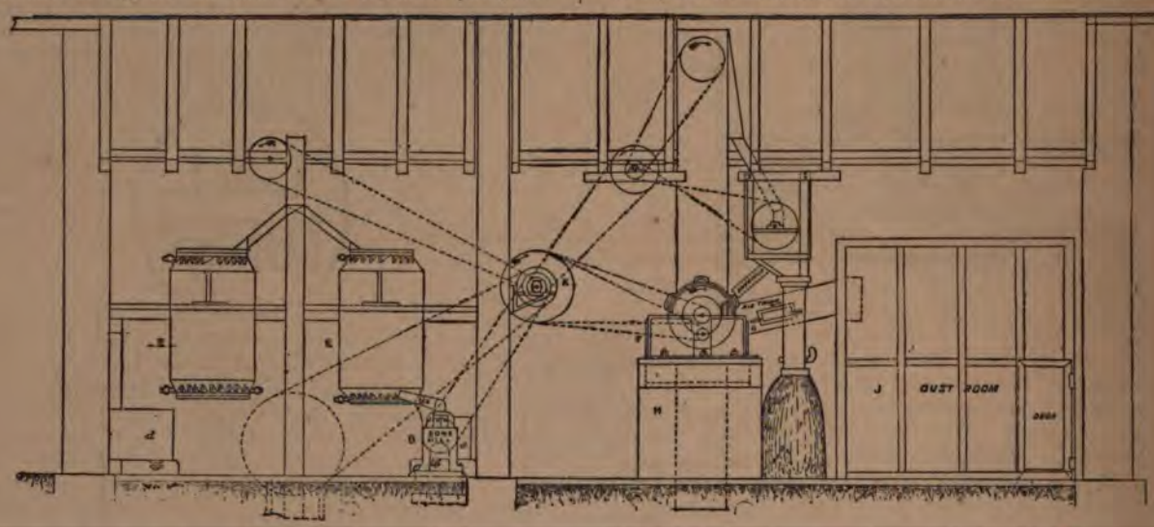
The bones are softened in these digesters, under a low pressure of steam, and the grease extracted without taking away the nitrogenous constituents.

From these steamers the bones are passed on to the disintegrator (B) and from thence carried by an elevator into the sieving apparatus, falling from this through sacking cylinders, into the bags.

The whole plant is designed to act as automatically as possible.

The digesters are used by many firms to treat foreign dry bones, as thereby the cost of grinding is much reduced. Moreover, the bones being in an unnaturally dry state, become permanently increased in weight, and by the action of the steam, brought into a better state to assimilate with the soil.

Mr. W. M. Fuller, also supplies grinding plant for all kinds of material, and all the accessories of chemical and manure manufactories.



Messrs. Lindner and Merz.

THIS firm was established about nine years ago by J. G. Lindner at Brünn, Austria. The works were started for the purpose of obtaining the "fulling fat" from the hydraulic pressed cakes produced in the utilisation of the waste fulling water, resulting from the treatment of textile fabrics. The principle of the process was based on the well-known fact that oily substances could be extracted by volatile solvents, such as petroleum, ether, carbon bisulphide, etc. The extraction apparatus of J. Merz as shown below was used for this purpose, and proved itself so successful that it was forthwith patented in all countries.

As the result of this success, other waste products were treated resulting from textile, leather, fat, oil, stearin, paraffin, ceresin, ozokerite, and other industries. Thus waste products, hitherto a source of inconvenience, are converted into valuable recovered products and nitrogenous manure.

The establishment keeps two extractors of three cubic metres capacity in constant work, which daily free about 24 cubic metres of material from fat. This amounts to an annual capacity of 7,000 cubic metres, or 2,000,000 kilos. of refuse, which, in addition to fat, yield 1,500,000 kilos. of nitrogenous manure.

The utilisation of fatty waste products as an independent industry was created by the firm we have mentioned. It had not been previously practised in Austria, nor to our knowledge in Europe, and in recognition of this a gold medal was awarded to the firm. In New York, Long Island, Buffalo, Detroit, St. Louis, Chicago, Philadelphia, and other towns in America the extraction process is worked on the large scale for the treatment of waste food material and offal, an application closely connected with the interests of sanitation and agriculture.

There are many substances again which hitherto have been neglected, as sources of oil, apparently on account of the small percentage which they contain, and the consequent expense in obtaining the oil from them. Owing to the cheapness of extraction by the Merz Universal extractor, many substances belonging to this class containing from 12 up to 30% of oil can now be treated with success, amongst which are the following:—

	Percentage of oil.
Olive husks	12-15
Pumpkin seeds	20-25
Beech nuts	16-20
Grape stones	15-20
Plum kernels	25-30

It will thus be seen that in many instances this method of extraction possesses a marked advantage over the pressure system, which for many cases it is successfully supplanting.

Messrs. Woolley, Sons and Co.

THIS firm has for a long time now devoted a department to the apparatus required for furnishing analytical and works, laboratories. Amongst the latest novelties and improved forms of apparatus which this firm are introducing, we have recently met with a new balance, which has a special interest for research chemists and others, who require a balance which can be used in dusty or contaminated atmospheres.

Wagner's patent balance, which is represented intact in the accompanying illustration, aims at accomplishing two ends, viz., to secure greater accuracy by protecting the balance from dirt and variations of temperature, the weights from the wear and tear, which cannot be avoided in consequence of the constant handling entailed in the ordinary method of weighing; and also to combine accuracy with speed by facilitating the addition and removal of the weights.

There can be no doubt as to the rapidity of the weighing operation being enhanced, seeing that in 15 seconds all the weights can be carefully placed on the balance, an operation which has been found by experiment to take 28 seconds in the ordinary way.

The beam of this balance is 200 millimetres long, being made of aluminium in one piece; and as it is stiffened in an upward direction, the possibility of its bending is reduced to a minimum, whilst the sensibility is sustained whether the pan is lightly or heavily loaded. The planes of the three bearings are made of agate, and are carefully ground and polished, whilst the rider scale attached to the beam is divided into milligrams and tenths of a milligram. When the balance is out of use the weights rest upon the forked levers, being lowered on to the pan when required, as shown by the 100 gramme weight in the woodcut.

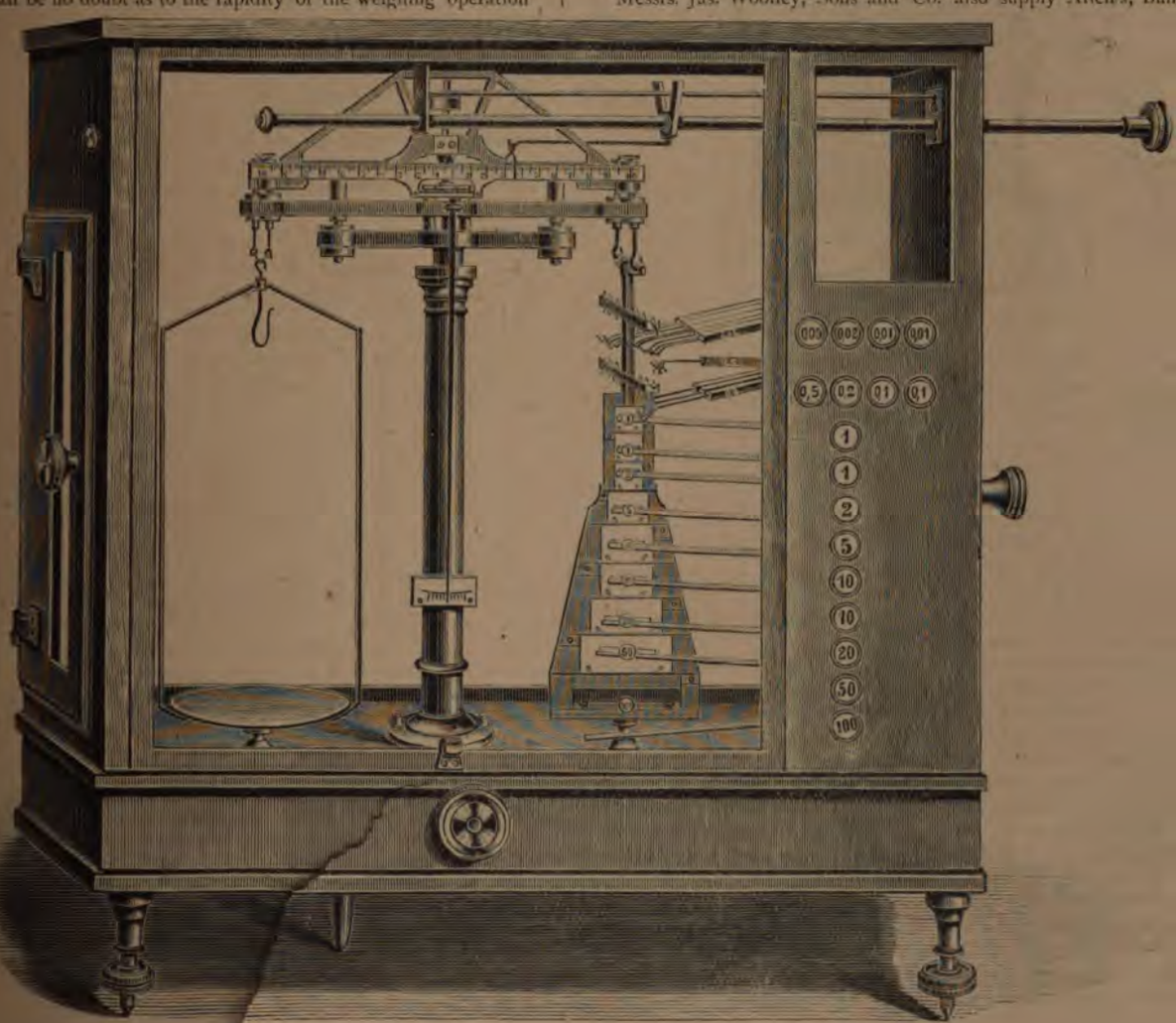
The operation of weighing consists in first placing the object to be weighed upon the left-hand pan, and then turning to the left the various buttons until the equilibrium has been established.

Another piece of apparatus which will be of considerable service to those having to deal with the extraction of soaps, oils, and fats, etc., is an improved form of Soxhlet's tube. It consists of an ordinary Soxhlet's tube, a wide mouth flask of 8 oz. capacity and a glass Liebig's condensor.

The lower portion of the Soxhlet's tube is carefully ground to fit the flask; the upper portion of the tube is also ground to receive the inner tube of the condensor, by these means dispensing with the use of either corks or india-rubber bungs.

Each apparatus is fitted on a mahogany stand, with copper water bath, and is provided with two spare flasks, with ground necks.

Messrs. Jas. Woolley, Sons and Co. also supply Allen's, Bunte's,

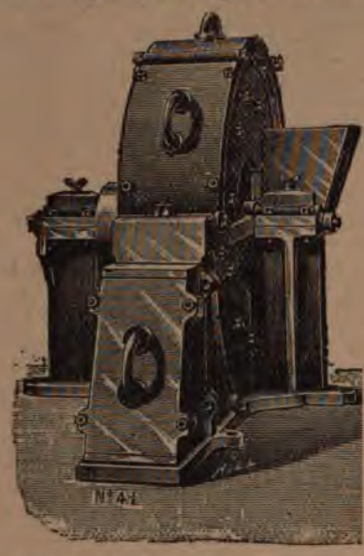


Hempel's, Orsat's, and the other gas analysis apparatus mentioned in Winkler and Lunge's technical gas analysis. Apparatus for the viscosity and flashing points of oils, specific gravity balances, and hydrometers.

Mr. J. Harrison Carter.

THE Carter disintegrator has now so firmly established itself as one of the leading grinding machines of the day that a brief review of its chief features will no doubt be of interest to those who have not had the opportunity of seeing one for themselves.

In this disintegrator the grinding is done by percussion, the object in view being to pulverise with a blow given by a flat surface. The material is fed in at the periphery of the grinding chamber, and falling on the extremities of the beaters, which travel at about three miles per minute, is pulverised by them, or by being beaten against the chilled iron linings of the upper half of the chamber, or the steel bars of the screens which form the lower half. In the ordinary grist and other mills this is accomplished by friction. The finer the sample required, the closer the grinders must be together, and a greater amount of friction is



engendered. If the object aimed at is flouring or pulverising, discs with sharp edges are failures, they will only granulate, and if they are blunt, the silex contained in the outer coating of grain, barks, etc, soon polishes them, and even with the application of enormous power they will not really flour the material.

The main body of the machine is of cast iron; the inner linings or renewable plates of the hardest chills; the spindles of steel; the bearings of phosphor bronze; beaters of Lowmoor iron faced with steel; screens of wrought iron sides, and steel bars or strong special perforated steel plates. All these materials are of the best description. The workmanship is of the best.

There are from four to six of these beaters made of the best Lowmoor iron and faced with highly tempered steel, forged on. They revolve in the direction which will strike the material being ground down on to and through the screens, allowing all that is easily ground to escape at once, the harder or tougher portions only going round the top half of the machines, thus reducing wear and tear and liability to clog when grinding sticky materials. The beaters are set so that in running they travel in three paths, thus covering the whole available space of the beater chamber. When worn at the ends they can be refaced with steel by any good blacksmith. They must then be put into the disc, and the whole centre be most carefully balanced.

The screens are made with the perforated or mortised spaces, perfectly level on the inside face and under the full force of the beaten material, thus keeping them open. These, as mentioned above, form the bottom half circle of the machine, and the mesh or widths of openings determine the fineness of the material being ground, as it has to escape through them. Screens of a variety of meshes are sent with each machine to suit the work, and enable the fineness to be varied. They can be quickly changed, and a finer or coarser mesh substituted as required.

The spindles are made of steel, with an ingenious arrangement at the ends for easily preventing "end play." The bushes or bearings are made in one piece of phosphor bronze, are of great length and have a simple and efficient means of lubrication, so that if properly attended to there is no difficulty with hot bearings. The bearings are turned on the outside, and both seatings bored out at same time by cutters on a steel shaft passing through both bearings, so that they must be parallel, and it is impossible to bind the bearings by screwing down the caps

The chief way to success when grinding with disintegrators is to continually run the machine at full speed. With even feeding an evenly ground sample is obtained. The wear and tear on the belt and engine is considerably lessened, and in this way the extra cost of an automatic feed is soon saved. The material is in the machine undergoing the operation of disintegration but a very few moments, and it will therefore be seen that if the feed is delivered to it intermittently the full output cannot be obtained, and the speed of the machine is irregular, producing an unevenly ground sample. It is therefore in all cases recommended that automatic feeding be adopted where the material does not exceed 1 in. cube.

The machines have inner linings of hard chilled plates either serrated or smooth, according to the kind of work they have to do These plates are renewable (like all other wearing parts), so that it is impossible for the mill, as a whole, to wear out.

The following chemicals, barks, etc., as well as numerous other materials for other trades, are easily ground by these machines:—

Anthracene, antimony, artificial manures, asbestos, ashes, asphalte, alum, alkali, bark, barytes, black lead, blood (dried), bones, borax, bricks, brimstone, cake of all kinds, carbonate of ammonia, charcoal, colours, china clay, dyewoods, dry soaps, French chalk, fullers earth, gypsum, horns and hoofs, logwood, litharge, manganese, mica, myrabolams, nitrate of ammonia, rock salt, salt, saltpetre, shale, soda, soda ash, talc, tanning materials, ultramarine, white lead, etc.

Messrs. R. and J Dempster.

MESSRS. Robert and John Dempster, of the Gas Plant Works, Newton Heath, Manchester, have been in business as manufacturers and erectors of apparatus for gas and chemical works for the past 25 years. Their establishment is one of the largest and best equipped in the world for this class of specialities, the firm employing over 500 hands in different branches of the engineering trades.

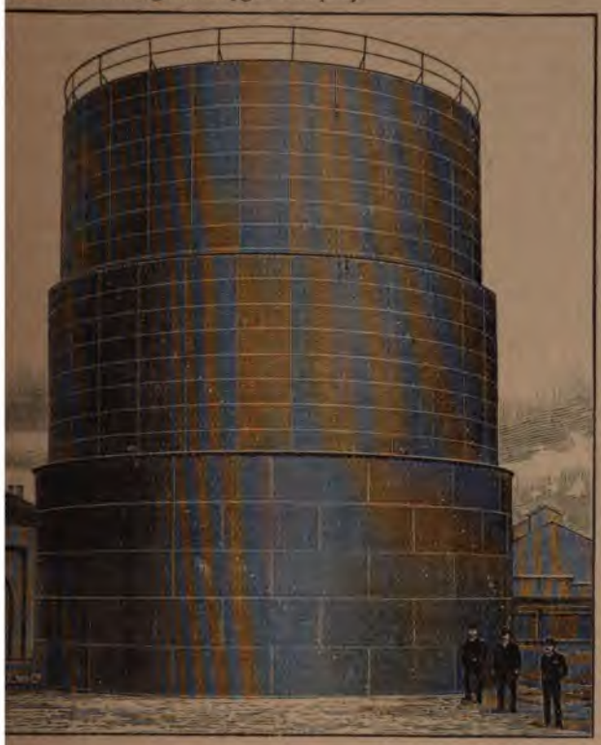
The apparatus produced is almost exclusively used in gas and chemical works, their long experience in this branch of engineering having enabled the firm to so much improve such apparatus generally, that their designs have been adopted in every quarter of the globe.

The foundry during the busy season gives employment to about 100 moulders, and these, with the aid of moulding machines, power-driven cranes, and other appliances, turn out 25 tons of castings per day. These include columns, beams, tanks of every kind, kiers, stills, retorts, pans, condensers, tar extractors, washers, scrubbers, purifiers, valves, pipes, staircases, engines, and all kinds of miscellaneous castings. The engineering shops are provided with the most modern machine tools, several having been designed specially for this works. A large plant is constantly planing the flanges of plates, this securing better work, and at the same time enabling tanks, cisterns, etc., to be made and erected at less cost than when the joints are made in the ordinary way with borings.

A large plumbers' shop adjoins the engineering shops, where the lead work for chemical plants is manipulated.

Gasholder construction is also a speciality, and provision is made for the fitting together of gasholders up to 250 feet in diameter under cover. This keeps the iron work dry during construction in bad weather, and prevents oxidation before a protecting paint has been applied. The firm manufacture Messrs. Gadd and Mason's patent columnless holder. This invention dispenses with the expensive columns, girders, and

ndations for supporting the gasholder in the ordinary way. The holder is perfectly secured in position by means of double rollers and ral guides, and besides being economical is safer than the old type. illustrate a telescope holder of this kind recently erected in an iron k for the Birmingham Oxygen Company.



his firm are makers of improved appliances for the thorough treat- t of the residual products from the carbonisation of coal. Their hate of ammonia plants are well known, and they have erected e of the largest tar distilling plants. Their condensers, exhausters, monia extractors, etc., for dealing with various gases for extracting residuals and securing a commercial return, have proved most essful, and ought to ensure a continuance of the demand for pro- ions which are marked by so much energy, foresight, and practical ty.

Messrs. I. Levinstein and Co., Limited.

ESTABLISHED 1865.

HE firm of I. Levinstein and Co., Limited, was originally established at Blackley, near Manchester. Commencing in a small way, the business rapidly developed, and in 1884 the kley premises not being large enough for further extensions, the bought in the same year, 1884, the Aniline Works, formerly occupied by John Castherlas and situated at Crumpsall Vale, with 14 acres of land attached.

On this land they erected on the most approved plans, and with the experience acquired at Blackley, new works, which were still further considerably extended, in 1890, on the conversion of the firm's business into a limited liability company.

These works are now one of the finest and best laid out chemical works in this or any other country, and are provided with the very latest machinery and appliances, special attention having been devoted to avoid waste in manufacture and what goes hand in hand with it, the emission of fumes or vapours.

The works produce not only raw materials and intermediate products used in the manufacture of coal tar derivatives, a large portion of which is exported to all parts of Europe and America, but also a great variety of colouring matters and pigments.

The works cover over nine acres of land, and are divided into five chief departments :—

1. The manufacture of sulphuric and nitric acid.
2. Refining of naphthaline, manufacture of naphtholes, and manufacture of naphthlylamines.
3. Manufacture of basic and acid colouring matters.
4. Manufacture of colouring matters which dye cotton without a mordant.
5. Manufacture of pigments and lakes.

As an indication of the excellency of the productions, we reproduce cuts of the three gold medals and one silver medal which have been gained by this firm at various exhibitions.

Messrs. Nolting and Co.

THIS firm has long been known in connection with the apparatus employed in chemical and other industries for which they are agents. Amongst the chief of these is the Merz extractor, and also a patent apparatus for extracting fusel oil and rectifying raw spirits. The process is the patent of Dr. Traube, of Hanover, who effects the purification by treating the crude spirit with hot potash liquor, and subsequently re-distilling. Amongst the advantages claimed for this process are the following :—

The outlay involved is small, the nature of the raw spirit is of minor importance in relation to the purity of the final product, being therefore especially applicable to the treatment of molasses or maize spirit, etc. On the large scale the troublesome and expensive process of filtering through charcoal is rendered supererogatory, and, lastly, the smallest distilleries can produce pure spirit, eliminating the impurities of the first and second runnings.

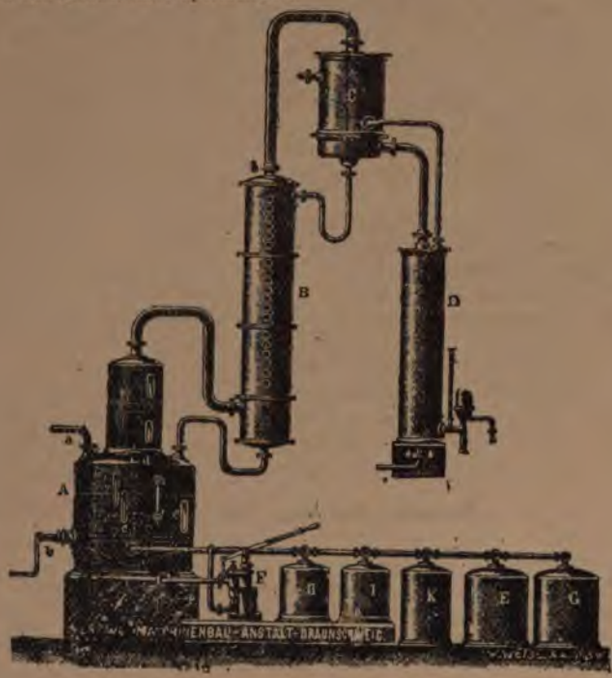
The apparatus for this process is made at the Brunswick Machine Co.'s Works, and is illustrated by the cut on the next page.

It consists of a large spirit holder, with a rake attachment for mixing the potash liquor and the raw spirit, connected with either a condensor or a small distillatory column with dephlegmator, so as to serve as a still as well.

To put the apparatus in working order, about 320 gallons of hot potash liquor are run into the holder at a sp. gr. of from 1·22 to 1·23

(44°-46° Tw.); upon this 60-75 gallons of crude spirit of 85° are run through *a* from a store tank. The rakes are then set in motion by the aid of *b*, and the whole well mixed.

In a short time, by means of the glass slits *c* provided for inspecting the interior, a superstratum of illsmelling, impure spirit of about 50° containing much fusel oil will be seen to collect. This layer, consisting of about 12½ gallons, is run into the large receiver E by means of the vertical valve operated at *d*.



About eight gallons of raw spirit and four of water are now pumped by means of F into the holder, the process repeated, and another 12½ gallons run off into the same receiver E, also running about half a gallon into the receivers H, J, and K for future use. The whole process can be completed in about three-quarters of an hour. The spirit remaining in the holder is then distilled, the result being a highly rectified spirit. At intervals of from four to five days the contents of the receiver E are pumped back into the holder, more potash liquor added, the strength of which is altered to suit the change in the spirit from 85° to 50°, and the first process repeated. About six gallons of spirit separate, which are very rich in fusel oil, and are consequently run into G, wherein the foul tailings are stored until a sufficient quantity has collected, when they are sold as denaturalised spirit.

It will be noticed that there is no difficulty in distilling the last runnings, as experienced in other rectification processes, 90% of the raw material treated being recovered as fine spirit, which has been certified by Professors Fresenius and Konig to be absolutely free from fusel oil.

Messrs. T. and R. Lees.

ESTABLISHED 1852.

THE number of small mishaps which are constantly occurring in a chemical works is legion. In order to meet such emergencies there are many tools which will be found very handy in the general fitting shop, amongst which the following productions of Messrs. T. and R. Lees are worthy of mention:—

Their patent self-feeding hand-power drilling machine will perhaps be the most useful. These machines are very useful in chemical works and other workshops for drilling in cases of breakdowns.

Large numbers have been supplied to the principal railway companies and electric light companies in Great Britain. They are made in four sizes. No. 1 machine will drill holes up to 1½ in. diameter, and 6 in. deep.

This machine supersedes the old Ratchet Brace, and is specially adapted for drilling by hand-power in places where the work cannot be done by an ordinary drilling machine. When it is fixed to a bench it also answers the purpose of an ordinary drilling machine. The feed motion is self-acting, and the handle of the machine can be placed in three different positions for working, which makes it applicable for drilling in difficult positions. It has a quick adjusting motion for getting the drill to and from

Again, where temporary timber structures are required for or erecting plant, the "Atlas" circular saw bench will be fou handy and time saving tool. This machine is specially ad cross-cutting and general work.

The frame-work is all in one casting, thereby giving str firmness in working.

The machine is fitted w gun-metal bearings, steel turn-over fence, and strap- is complete with one steel circular saw. This is made in four sizes, an adapted for the joiner's s chemical works.

The need of small power in confined spaces is a want oft fel works, especially electrical, cement, manure, and chemical w improved vertical steam engine, as shown in the illustrati will be found very useful in such a case.

These engines are self-contained, occupy little space, and fixed. Each engine being fitted with an adjustable high speed equilibrium, and stop-valve combined, as illustrated.

Messrs. Galloways, Limited.

"GALLOWAYS for Boilers" is as universal an expression as "Corn in Egypt," as this firm has by far the largest establishment in the world for the construction of steam generators and their accessories. Although it may appear almost incredible, yet it is a fact that from 1872 to 1890 inclusive, the firm made 5,641 boilers; or an average of 297 boilers per annum for 19 years, mostly of very large size, generally over 24 feet long. This is over one boiler per working day, which is a distinct proof of the excellence of the workmanship and the superiority of the design of this boiler over other types. It is now over 20 years since the first Galloway boiler was made, since which time improvements have been continuously introduced, and recently machinery has been put down with the view of insuring that every individual part shall be made with mathematical accuracy, and of sufficient solidity to resist the high pressures which are now adopted. When the plates are received strips are cut off for testing in a large machine of Kirkaldy's make, then the plates are bent in rolls, drilled, rivetted, welded and flanged, turned, etc., all by machinery, without hand labour of any kind; the tubes also are machine-made. Most of the tools on the premises are constructed by the firm themselves, who are thereby enabled to have them of greater strength than can be purchased from other makers, and exactly suitable for the work to be performed. Messrs. Galloway have been selected to supply steam for the British section of all the principal exhibitions which have been held in recent years, including ten boilers at the Manchester Exhibition and five at Edinburgh, and wherever awards have been given have invariably secured the highest, including the Grand Prix at both the Paris Exhibitions of 1870 and 1889, a unique experience. The reason why these boilers have such an hold on public opinion is that in addition to the substantial character of their construction, they are the most economical in the market; and by reason of the excellent circulation of the water promoted by the cone tubes, the most durable. In addition to this, asthey are found in practice to give the driest steam, their performance is thereby greatly enhanced; and, altogether, taking every point into consideration, their success may be taken as a correct indication of their merits. The main features of this boiler are that it consists of a cylindrical shell containing two furnaces, which join behind the fire bridges into one "Galloway" flue supported by a proper number of cone tubes; which, by reason of being in the direct line of the flame, are impinged upon by it, and extract far more of the heat than is possible by the ordinary flue surface, past which the heat simply glides. This is proved by the low temperature of the gases escaping into the chimney. A Galloway boiler evaporates about 20 per cent. more steam than an ordinary two-flued boiler of the same dimensions, and as only the same amount of fuel is consumed the economy must be in proportion. The illustration shows seven boilers at the Claybury Asylum, with space for three others. At the chemical works of Messrs. Brunner, Mond & Co., there is one range of Galloway boilers working in number, which have been supplied at different times, pleased were the firm with the results.

The works of this firm are at Knott Mill, Deansgate, Manchester, where are also the offices, which, like the works, are splendidly fitted and arranged. They alse have a branch office at Ardwick.

Trade Notes.

THE MAGNOLIA ANTIFRICTION METAL CO.—We are pleased to note that the patent antifriction metal, manufactured by the above-named company, of which so much has been heard during the last twelve months, and concerning which we have had so many inquiries, has successfully satisfied the requirements of those who have adopted its use. As a result, for the benefit of those in the immediate neighbourhood, the company have opened an office at 76, Haworth's Buildings, Cross-street, Manchester, where a stock will be kept, and business in future transacted.

POWDERED CHROMIC ACID.—The United Alkali Company, Limited, do not mean to leave a stone unturned by which they may keep themselves to the front in the manufacture of chemicals. The continued demand for chromic acid for the purposes of the electricians and others has led them to start making this article at Widnes. It is supplied in 5 lb. tins at 1s. per lb., and in iron drums containing from 28 up to 224 lb., at a price ranging from 9d. down to 7d., less 2½% discount. It can also be obtained in 5 cwt. wooden casks, when an allowance of 10s. per ton is then made. These prices are free on rails at Widnes. The packages are not charged for, and are returnable.

A SCIENTIFIC JOURNAL FOR ROUMANIA.—We are pleased to note the commencement of a new scientific journal at Bucharest, Roumania. It is called the *Bulletin of the Scientific and Physical Society*. The journal is devoted to the chemistry, physics, and mineralogy. It is composed chiefly of the reports of the meetings of the Scientific Society, and contains some interesting and original articles.

Correspondence.

*** *We do not hold ourselves responsible for the opinions expressed by our correspondents.*

ANSWERS TO CORRESPONDENTS.

SCIENCE.—It is generally in the form of bicarbonate, the object being to assist the "working" produced by the carbonic acid gas evolved during fermentation.

NIGRUM.—There is an apparatus, but it is somewhat crude. We do not know of any other, however, and should suggest your giving the one we mention a trial. It is comparatively new and very simple.

C.A.L.—You will see by consulting the back numbers that the report of the company you refer to has already appeared in these columns.

HECTOR.—It is owing to bad ventilation. Sulphur dioxide chiefly. Try leaving the door open slightly, if this does not answer further steps must be taken, as otherwise serious results may ensue.

Market Reports.

THE LIVERPOOL OIL AND COLOUR MARKET.

LIVERPOOL, WEDNESDAY.

COLOURS quiet and unaltered. Ochres: Oxfordshire, common, £10, medium, £12., best, £15.; Derbyshire, common, 40s., medium 50s., best, 60s. Welsh, best, 70s., seconds, 50s., and common, 18s.; Irish. Devonshire, 40s. to 45s.; French, J. C., 55s. to 60s.; M. C., 65s. to 67s. 6d. Umber: Turkish quiet. Devonshire, 50s. to 55s. White lead, red lead, and oxide of zinc unchanged. Venetian red, £6. 10s. to £10. Cobalt: Prepared oxide, 10s. 6d.; black, 9s. 9d.; blue, 6s. 6d. Zaffres: No. 1, 3s. 6d.; No. 2, 2s. 6d. Oxide of iron: common, £6.; medium, £10.: finest, £20.

OILS.—Palm Oil continues firm with a fair business doing in Lagos at £22. 5s.; Cameron, £22. 10s., and Accra on spot, £22. 5s. all transit. Olive has been quiet almost to lulness, there is however a little more doing to-day. Neapolitan being quoted £38. to £39. per ton. Linseed Oil has been in fair request with prices at 19s. 6d. to 20s. 6d. per cwt. in export casks. Rape, refined stetting remains firm at 32s. 6d. per cwt. Cotton Seed has further declined, Liverpool refined now standing at 18s. 9d. per cwt. American is steady. Castor Oil has been dull all the week, there is a large supply of good seconds Calcutta at 2¾d per lb. first pressure, French remaining nominally at 2⅞ per lb. The prices of Tallow are without change with a fairly steady demand. Resin has been steadily held with common still at 4s. 6d. per cwt. Spirits of Turpentine have declined somewhat, prices being in buyers' favour at 25s. 6d. per cwt. Petroleum American and Russian refined are unaltered.

THE METAL MARKETS.

LONDON, WEDNESDAY.—Pig iron steady; Scotch warrants closed at 47s. cash. Middlesbrough 38s. 1½d. cash, and hematite 47s. 9d. cash. Copper quiet; Chili bars, G O B's. and G.M B's. closed at £45. 12s. 6d. cash, and £46. 5s. to £46. 12s. 6d. three months. Tin weaker; Straits closed at £89. 17s. 6d. to £90. 7s. 6d. cash, and £90. 2s. 6d. to £90. 12s. 6d. three months. Australian, £90. cash; English ingots, £93. 10s. to £94. Lead dull: English, £11. 5s. to £11. 10s.; Spanish, £11. 2s. 6d. to £11. 5s. Silesian spelter, ordinary, £22. 7s. 6d. Quicksilver dull: First hands, £7. 10s., second hands, £7. 9s. Copper shares dull; Cape 1¾ to 1⅞; Copiapo $2\frac{7}{16}$ to $2\frac{9}{16}$; Libiola 2⅞ to 3; Mason and Barry $4\frac{15}{16}$ to $5\frac{1}{16}$; Rio Tinto 18½ to 18⅝; Tharsis $5\frac{13}{16}$ to $5\frac{15}{16}$; Namaqua 1¾ to 1⅞; Panulcillo ⅞ to 1.

REPORT ON MANURE MATERIAL.

Since the turn of the year there has been a fair amount of business passing at prices favouring buyers in phosphatic and at some advance in nitrogenous material.

High grade, 75/80%, Florida Land phosphate continues to be pressed on the market at 9½d. per unit, in cargoes c.i.f. to U.K. or Continent, and less would probably now have to be accepted to induce any important buying. Peace River Rock is also offered more freely, and 9½d must now be considered full value. Hot air dried Carolina River Rock, though quoted higher, would have to be sold at about 9½d., meantime manure makers being fully bought for their spring requirements and fairly well for summer shipments, and there being prospect of ample supplies of mineral phosphates, are for the most part inclined to look on low grade. Continental phosphates offer freely at easy prices, but the higher grades are relatively dear, and are not coming much into U.K.

River Plate bones hang fire, and we do not hear of any very recent transactions. Cargoes afloat are worth £4. 5s. to £4. 7s. 6d., according to size and position, U.K. or Continent. Some inferior East India crushed bones arrived in Liverpool have been sold at £4 7s. 6d, but for good crushed Kurrachees £4. 12s. 6d. would have to be paid, afloat or for shipment. Considerable sales of Bombay bone meal arrived have been made at £4. 11s. 3d. ex quay, Liverpool, and for shipment at £4. 12s. 6d. Spot has now been cleared, and £4. 15s. ex store would now have to be paid. Nearest value of good clean parcels of charring bones is £4. 10s. to £4. 12s. 6d. ex quay, Liverpool, the arrivals being still on a very limited scale.

Nitrate of soda is decidedly firmer in all positions. Spot is very firm at 9s. 3d. to 9s. 4½d., according to quantity. Cargoes at coast or due are worth fully 9s. 3d., October shipments 9s. 4½d. to ordinary and refined, and Novembers fully 9s 6d. per cwt.

Dried blood is more inquired for, and 9s. 6d. to 9s. 9d. ammonia now asked, according to position of works Kainit is scarce and in demand at 42s 6d. to 45s., in bags free to rails. Superphosphates firm at 45s., in bulk, f.o.r. for 26%.

TAR AND AMMONIA PRODUCTS.

No business has been transacted during the week in ber thracene. The nominal prices for the former article theref nominally about 1s. 11d. to 2s. for 90's and about 1s 9d. The anthracene market remains nominally at 12½d. for 30% for 30% B. No other tar product seems to have recovere general stagnation, but pitch retains its former firmness, and quoted for the past few weeks will hold good for to-day.

It was hardly to be expected that the recent low range of ammonia values would prevail for very long, and there h further rally in prices, purchasers having come forward r Present supplies have been largely drawn upon, and a subs vance in quotations is to be noted, though the dealers have past few days been using every effort to stem the adva market value at all ports may be fairly stated as £10. 10s., chasers are offering less than this in the hopes of securing p ies. Beckton price is still £10. 15s, but there are second-h at £10. 10s. Nitrate of soda is also firm, and cargoes ha hands at 9s. 3d. to 9s. 6d., while the price on spot is now 9

TYNE CHEMICAL REPORT.

T

Market steady, and chemicals in better demand. C business has been done in caustic soda for both prompt a Quotations are as follows:—Bleaching powder, softs, £7. 1 hards £7. 15s. per ton; caustic soda, 77% £11. 10s. per £10. 5s. per ton; recovered sulphur, in 2 cwt. bags, £6. 1 (very scarce); soda ash, 48% £5. 8s. 9d. per ton, 52% £ per ton, 56% £6 6s. 9d. per ton; alkali, 36% £4 18s. 6 white alkali, 48% £6 10s. per ton, 50% £6. 15s. 6d. pe £7. per ton; hyposulphite of soda, £7. per ton in 5-7 £7. 15s. per ton in 1 cwt. kegs in 10 ton lots; silicate of so £2. 13s. 6d. per ton, 100° Tw. £3. 13s. per ton, 140° Tw. per ton; soda crystals, in 2 cwt. bags £3. 3s. 6d. per ton n in casks, £3. 3s. 6d. per ton gross weight; sulphate of so 37s. to 40s. per ton, in 2 cwt. bags 5s. per ton extra; potash, 5⅜d. per lb. less 6%; pearl hardening, £3. 10s. pe pure white sulphate of alumina, £4. 10s. per ton nett; £7. 10s. per ton nett; chloride of barium, £7. 10s. per nitrate of baryta crystals, £17. per ton, ground £17. 10 sulphide of barium, £7. per ton; carbonate of alumina, £2 ton; aluminate of soda, £33. 10s. per ton; hydrate of ba per ton.

Common salt. 9s. per ton f.o.b. Tees; quiet.

Coals: Market steady. Best Northumberland steam, 10s per ton f.o.b.; Durham gas 9s. 6d. per ton f.o.b.; manufac rather firmer, demand being better; bunker coal quiet. C blast furnace coke firm at 16s. per ton f.o.b.; gas coke rathe

THE LIVERPOOL MINERAL MARKE

Minerals have ruled steady during the week. Manganese nil, and prices continue firm, higher prices being asked. Bo per lb.; sulphate, £21. 10s.; oxalate, 1s. 6d. per lb. £15.; carbonate, £12. 10s., steady. Magnesite: Raw tinues quiet. Raw ground, £6. 10s. and calcined, Bauxite (Irish Hill brand) continues brisk at full prices—l seconds, 16s.; and thirds, 12s. French chalk: Arrivals are small, whilst more business doing and prices firm for G.G.B. "Angel White" brand; silvery, 90s. to prime quality, 90s. to 95s.; superfine, 105s. Barytes: prime lump still scarce, being quoted at 90s. to 95 70s. to 80s.; whilst finest white sulphate is steady. "Ang No. 1, 70s.; No. 2, 60s. to 65s.; No. 3, 45s. Pumice-st Iron ore easy: Manganiferous, Santander, Bilbao, Irish, an land firmer. Emerystone steady, No. 1 lump £5. 10s. to £ £5. to £5. 10s. Fullers' earth better; best lump, impalpable ground, £7.; "Emerald" ground, 80s. wolfram, tungstate of soda, and tungsten metal in good full prices. Chrome ore continues to be inquired for, bot

and forward delivery, especially high-class qualities. Antimony ore and metal firmer. Asbestos firm. Potter's lead ore of best quality unaltered; smalls, £12. 10s. to £13. 15s.; selected lump, £14. 10s. to £15. 10s. Calamine quiet. Strontia sulphate (celestine) very quiet. Limespar unchanged, especially for English manufactured, old G.G.B. brand in demand at 50s. (ground). Felspar quiet. Fluorspar: Best quality steady. Ferromanganese firmer, 75%, £12; 85%, £13. 15s. Plumbago brisk: Spanish, £5.; best Ceylon lump at last quotations; Italian and Bohemian, £4. to £12. per ton. "Founders," £5. to £6.; Blackwell's "Mineraline," £10. French sand, 20s. to 22s. 6d. Ground mica, £45. to £50. China clay steady; common, 18s. 6d; good medium, 22s 6d to 25s.; best, 30s. to 35s. (at Runcorn). Bog ore (oxide of iron) steady; finest quality, 22s. to 23s.

WEST OF SCOTLAND CHEMICALS.

GLASGOW, TUESDAY.

The only change of price worthy of being specially noted is the recovery that has at last overtaken sulphate of ammonia. During the week the shipments out of Leith were unusually large, being returned as summing to over 1,100 tons, and the recovery began directly on the turn of the year. The quotation to-day for spot, although confessedly there is very little passing, is £10. 7s. 6d to £10. 10s., and there is a report that in one case a small fraction over the latter figure was got. To-day the feeling cannot be said to be strong, and while buyers can supply themselves at £10. 7s. 6d. still, if they go properly about it, very few sellers find themselves able to stick firmly to the higher of the quotations. The forward market is, for the time, quite a blank.

In the paraffin section the symptoms are less satisfactory. Imports of American scale have been very large, so much so that the article is flat on the market, and would fall in price were it not upheld by the convention of home and American makers. The matter will be discussed at the forthcoming annual meeting in London. Oils and other products are as before.

The general market is very quiet after the holidays; consumers appear to be under the conviction that prices have been raised higher than can be maintained permanently, and are buying only to the extent of day-to-day needs.

Chief prices current are:—Soda crystals £3. 2s. 6d., nett Tyne; alum in lump, £5. 10s., nett Glasgow; soda ash, 1⅜d., less 2½%, Tyne; caustic soda, white, 74°, £11. 5s., 70/72°, £10. 5s., 60/62°, £9. 2s. 6d., and cream 60/62°, £8. 17s. 6d., all nett Liverpool; bicarbonate of soda, 5 cwt. casks, £6. 15s., and 1 cwt. casks, £7. nett Tyne; refined alkali, 1⅜d., less 5% Tyne; bleaching powder, £7. 7s. 6d. nett Tyne; saltcake, 37s. 6d.; borax, English, refined, £29. 10s. and boracic acid, £37. 10s., nett Glasgow; bichromate of potash, 3¾d., less 10% for Scotch and English deliveries (for export 3⅜d., less 10% f.o.b. Glasgow); bichromate of soda, 2¾d., less 10% for Scotch and English deliveries (for export 2½d., less 10% f.o.b. Glasgow); chlorate of potash, 5⅜d., less 5% any port; nitrate of soda, 9s. 3d.; sulphate of ammonia, £10. 7s. 6d. to £10. 10s., f.o.b. Leith; salammoniac, first and second white, £35. and £33., less 2½% any port; sulphate of copper, £15. less 5% Liverpool; paraffin scale (hard), 2⅛d., and soft 2 1/16d. to 3d. per lb.; paraffin wax, 120°, semi-refined, 3⅝d. to 4d.; paraffin spirit (naphtha), 7d. a gallon; paraffin oil (burning) 5d., 5¼d. and 5½d. according to kind, at works for Scotch buyers (English orders about 1d. lower); ditto (lubricating), 865°, £3. 15s. to £4., 885°, £5. 5s. to £7., and 890/895°, £6 to £8. Week's imports of raw sugar at Greenock were 42,993 bags.

MISCELLANEOUS CHEMICAL MARKET.

There is no material change in the position of any of the staple products of the alkali trade. Upon the whole there is good demand both for home and foreign markets. Bleaching powder is very firm, and without any excess of stock, and is selling freely for spot delivery at £7. 10s. per ton on rails at makers' works, and £7. 15s. softwood casks, and £8. per ton hardwood casks f.o.b. Liverpool, Tyne, etc. For contracts over 1892 a concession of 5s. per ton is made to consumers. Caustic soda continues a firm market, and fair amount of business is being done both for early and forward deliveries. Current quotations are without change, viz.: f.o.b. Liverpool, in 10 ton lots, 74% £11. 5s., 70% £10. 5s., 60% £9. 2s. 6d.; Cream, 60% £8. 17s. 6d. nett per ton; f.o.b. Tyne, 77% £11. 10s. per ton. Soda ash continues steady in all grades at 1⅜d. per degree f.o.b. Liverpool. Ammonia soda ash, 58% is spoken of at lower rates for later delivery, but such quotations are mainly speculative. Soda crystals are steady at £3. 3s. to £3. 10s. per ton according to package. Bicarbonate of soda, £6. 15s. f.o.b. Chlorate of soda very scarce for early delivery, and price firm at 7d. per lb. Chlorate of potash, 5⅜d., with only moderate demand. Sulphite and hyposulphite of soda firm at £6. 10s. and £8. per ton respectively f.o.b. Salt cake in bulk, nominally 36s. 6d. to 40s. at makers' works. Sulphate of copper still continues irregular, and with small demand realises only £14. 15s. per ton for spot deliveries. Lead salts generally are slightly weaker. White acetate at £26. 10s. c.i.f. Nitrate at £20. 10s. Acetates of lime have a drooping tendency on the spot, and business in the same is rather quiet. Brown at £7., and grey at £10. per ton at usual points. Acetate of soda rather lower, at £18. c.i.f. White powdered arsenic moving off readily at £10. 15s. to £11. nett per ton. Aniline salt and oil continue at nominal prices with a small demand. Carbolic acid crystals moving rather more freely, but without any material improvement in value. Sulphocyanides in small demand, and prices generally lower. Bichromates without change. Prussiate of potash still in good demand at 10¼d. to 10½d per lb. Recovered sulphur still a very strong market both for prompt and forward delivery.

Gazette Notices.

PARTNERSHIPS DISSOLVED.

G. E. P. CHEESMAN AND J. SMITH, under the style of T. Scott and Co., Abbey-street and Oxley-street, Bermondsey, distillers and rectifiers.

SMITH AND LIDINGTON, Bilston, japanners and tin-plate workers.

A. W. WOODLIFFE AND T. M. WRIGHT, under the style of Woodliffe and Co. Weedington-road, Kentish Town, mineral water manufacturers.

B. PHILLIPS AND SON, Liverpool, oil and colour merchants.

BANKRUPTCY ACTS 1883 AND 1890.

Adjudications.

FARRAR, GEORGE WILLIAM (trading as Farrar Bros.), Honley, dyer.

New Companies.

ALFRED BISHOP AND SONS, LIMITED.—This company was registered on the 31st ult., with a capital of £25,000. in £20. shares, to acquire and carry on the business of manufacturing chemists belonging to Messrs. Alfred Bishop and Sons, of 48, Spelman-street, Spitalfields, London. The subscribers are:—

	Shares.
A. Bishop, 171, Highbury New Park, chemist	1
Mrs. A. Bishop, 171, Highbury New Park	1
W. B. Bishop, 56, Foxgrove-road, Beckenham, chemist	1
Mrs. W. B. Bishop, 56, Foxgrove-road, Beckenham	1
H. W Symondson, Falsham, Westover-road, Wandsworth Common	1
W. F. Knight, 52, Gracechurch-street, E.C., solicitor	1
W. O. Attree, 52, Gracechurch-street, E.C.	1

JOHN RICHARDSON AND CO., LEICESTER, LIMITED.—This company was registered on the 30th ult., with a capital of £100,000., in £10. shares, to acquire and carry on the business of merchants, wholesale and export chemists and druggists, manufacturing, pharmaceutical and analytical chemists, medical publishers and printers, heretofore carried on by Mr. J. G. F. Richardson under the firm of John Richardson and Co., Leicester, at Leicester and London. The subscribers are:—

	Shares.
J. G. F. Richardson, Elmfield, Knighton, Leicester	1
Mrs. E. B. Richardson, Elmfield, Knighton, Leicester	1
H. N. R. Richardson, Elmfield, Knighton, Leicester	1
R. E. R. Richardson, Elmfield, Knighton, Leicester	1
H. P. L. Richardson, Elmfield, Knighton, Leicester	1
F. A. C. Richardson, Elmfield, Knighton, Leicester	1
Mrs. G. R. Bartley, 29, St. George's-road, Abbey-road, St. John's Wood	1

W. P. ADSHEAD AND COMPANY, LIMITED.—This company was registered on the 2nd inst., with a capital of £6,000., in £5 shares, to acquire and carry on the business of wholesale and retail manufacturing chemists carried on by Messrs. W. P. Adshead and Company. The subscribers are:—

	Shares.
H. E Welch, Campbell-street, Belper, chemist	1
Mrs. H. E. Welch, Campbell-street, Belper	1
C. Cowan, King-street, Belper, reporter	1
Mrs. A. Adshead, Belper	1
J. Cheetham, Bridge-street, Belper, auctioneer	1
D. W. Bardell, Derby, chemist	1
W. A. Cowlesham, Temple-street, Basford, Stoke-on-Trent	1

DEVON TRADING COMPANY, LIMITED.—This company was registered on the 5th inst., with a capital of £20,000. in £5. shares, to acquire and carry on the business of builders, merchants, lime and cement manufacturers, brick makers, etc., carried on by Messrs Wilson and Son at Queen-street, Station-Yard, Exeter; by Messrs. W. Scammell and Son at Queen-street, Station Yard, Exeter; Old Quay, Teignmouth and Queen-street, and the Marsh, Newton Abbot; and by Messrs. Scammell, Osler and Co. at Teignmouth, Newton Abbot, and Ipplepen. The subscribers are:—

	Shares.
W. Scammell, 87, Elm Grove Villas, Topsham	1
T. Wilson, 22, Cathedral Yard, Exeter	1
B. W. Osler, 4, Avenue Terrace, Teignmouth	1
E. T. Scammell, Pennsylvania Park, Exeter	1
F. A. Wilson, 10, Salutary Mount, Heavitree, Exeter	1
F. D. Wilson, 24, North-street, Exeter	1
J. S. Osler, 4, Avenue Terrace, Teignmouth	1

The Patent List.

This list is compiled from Official sources in the Manchester Technical Laboratory, under the immediate supervision of George E. Davis and Alfred R. Davis, who report professionally upon the value of Chemical Patents.

APPLICATIONS FOR LETTERS PATENT.

Preparation of Oil Paints and Paint Medium. M. Williams 22,809. December 31.

Withdrawing Tar from Mains. G. R. Hislop. 22,810. December 31.

Supplying Liquor to Ammonia Stills. J. J. Meldrum and T. H. Me 22,828. December 31.

Improvements in Gas and Hydro-Carbon Engines. W. Seck. December 31.

Improvements in Petroleum or Oil Motor Engines. C. D. Abel. December 31.

The Electrolysis of Metals. E. Placet and J. Bonnet. 22,854. Decem

Extracting Chromium by Electrolysis. E. Placet and J. Bonnet. December 31.

Extracting Chromium by Electrolysis. E. Placet and J. Bonnet December 31.

Machinery for the Condensation and Liquefaction of Gases. J. H. Lane. 22,870. December 31.

Air Compressors. S. H. Johnson and C. C. Hutchinson. 3. January 1.

Improved Motors. H. Weatherill. 7. January 1.

Ventilation. G. F. Harrington. 8. January 1.

Feed Pipes for Steam Generators. D. A. Quiggin and J. B. Hepbu January 1.

Taps or Cocks for Liquids. E. C. Peck. 11. January 1.

Gas Motor Engines. H. Campbell. 15. January 1.

A New Fire Clay Mixture. J. Hill. 19. January 1.

Ventilating Sewers, etc. J. L. Bennett. 20. January 1.

Gas Purifying Apparatus. H. Williams. 24. January 1.

Producing Artificial Cotton Threads from Hydro-Cellulose. O. A. and H. W. Miller. 34. January 1.

Improvements in Earthenware Pipes. R. F. Yorke. 46. January 1.

Disinfecting and Deodorising Apparatus. C. T. Kingsett. 49. Jan

Manufacture of Artificial Marble. P. A. Moreau. 50. January 1.

Improvements in Gas, Petroleum and Hot Air Engines. W. G. 55. January 2.

Rubber Tyres. T. W. May and P. Hancock. 64. January 2.

Ventilating Apparatus. H. S. Simester. 66. January 2.

Improvements in Regenerative Argand Furnaces. W. G. Potte January 2.

Improvements in Filters. G. MacDonald. 75. January 2.

Improvements in the Treatment of Oxide of Lead and Manufact White Lead. R. Matthews and J. Noad. 81. January 2.

Improvements in Blowers. W. H. Steel and W. H. Steel. 83. Januar

Manufacturing Soda and Chlorine. H. H. Lake. 89. January 2.

Improved Apparatus for the Production of Liquid Chlorine. H. H. 89. January 2.

Improvement in the Treatment of Ferro-Sodium Sulphide. H. H. 101. January 2.

IMPORTS OF CHEMICAL PRODUCTS AT THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending January 2nd.

Acetic Acid—

Holland,	47 pks.	A. & M. Zimmermann

Alkali—

Holland,	100 c.	Beresford & Co.
,,	500	R. W. Greeff & Co.
,,	2475	Knight, Hill & Co.

Alum—

Holland,	41 pks.	Ohlenschlager Bros.

Alumina Sulphate—

Germany,	122 pks.	R. W. Greef & Co.

Ammonium Nitrate—

France,	5 pks.	W. Grove & Co.

Barytes—

Germany,	45 cks.	Blundell & Co.
Holland,	22	O'Hara & Hoar
,,	184	Magee & Taylor
,,	44	S. H. Willoughby
Germany,	19	Union L. Co., Ltd.
,,	75	D. Storer & Sons
,,	2	L. & I. D. Jt. Co
Holland,	144	M. Ashby, Ltd.
,,	70	D. Storer & Sons, Ltd.

Brimstone—

Italy,	1 t.	Union L. Co., Ltd.
,,	10	C. J. Capes & Co.

Bromine—

Germany,	91 pks.	A. & M. Zimmermann

Borax—

Germany,	40 pks.	F. Stahlschmidt & Co.

Boracic Acid—

Italy,	50 pks.	J. Ruddy & Co.

Caoutchouc—

France,	10 c.	Flageollet & Co.
Zanzibar,	218	L. & I. D. Jt. Co.
,,	30	Prop. Bull. Wf.
Java,	4	S. Figgis & Co.
Germany,	29	Prop. Bull. Wf.
Zanzibar,	19	Lewis & Peat
Madagascar,	12	Gellatly, Hankey & Co.
Singapore,	337	L. & I. D. Jt. Co.
Greytown,	23	Major & Field
,,	12	R. G. Hall & Co.
Savanilla,	16	Prop. Bull. Wf.
Mozambique,	13	Forbes, Forbes & Co.
Singapore,	6	R. & J. Henderson
Savanilla,	30	Stiebel Bros.
Brazil,	20	Kleinwort, Sons & Co.

Carbonic Acid Gas—

Holland,	115 pks.	J. Barber & Co.
,,	115	Internat. Express, Ltd.

Castor Oil—

France,	71 brls. 30 cks.	Beresford & Co.
,,	12	G. W. Largen
,,	20	Mordaunt Bros.
,,	22 pks.	J. Greig
Italy,	40	L. & N.-W. Ry. Co.
,,	5 cs.	Grimwade, Ridley & Co.

Chemicals *(otherwise undescribed)*

Germany,	59 pks.	T. H. Lee
,,	6	L. & I. D. Jt. Co.
,,	10	W. Burton & Son
,,	129	A. & M. Zimmermann
,,	4	E. & O. Quitmann
Holland,	£6	J. Owen

Cream of Tartar—

Holland,	27 pks.	Middleton & Co
Italy,	31	Thames S. T. & L. Co.
France,	4	E. W. Carling & Co.
,,	3	Ross & Deering
,,	5	M. Ashby, Ltd
Italy,	20	W. C. Bacon & Co.

Dyestuffs—

Argols

Italy,	219 pks.	W. C. Bacon & Co.

Cutch

Rangoon,	496 pks.	A. G. Milne & Co.
,,	500	H. A. Litchfield

Extracts

E. Indies,	50 pks.	L. J. Levinstein & Sons
France,	220	B. & F. Wf. Co.
Norway,	21	E. W. Bott & Co.
U. S.,	125	G. B. Mackereth
France,	1	Hernu, Peron & Co.
,,	100	L. J. Levinstein & Sons
U. S.,	15	C. C. Brydent & Co.
,,	100	W. A. Bowditch

Gambier

Singapore,	83 pks.	J. Swire & Sons
,,	695	Beresford & Co.
,,	1286	E. Bousted & Co.
,,	1943	L. & I. D. Jt. Co.
,,	477	Brinckmann & Co.
,,	391	Baxter & Hoare
,,	417	R. & J. Henderson
,,	1959	Adamson, Gilfillan & Co.
,,	555	J. H. & G. Scovell

Indigo

E. Indies,	20 chts.	F. Johnson & Son
,,	30	T. Ronaldson & Co.
,,	32	L. & I. D. Jt. Co.
,,	81	Ernsthausen & Co.
,,	10	Ralli Bros.
,,	11	M. C. Rimmer
,,	5	Patry & Pasteur
,,	6	F. Huth & Co.
,,	14	Elkan & Co.
,,	16	Ross & Deering
,,	41	T. Barlow & Bros.

Orchella

Ceylon,	2 pks.	Price, Boustead & Co.
Canaries,	15	Marshall & Trench

Saffron

Spain,	1 pk.	B. & F. Wf. Co.
,,	1	R. Quincey & Son
,,	1	Brumlen & Son

Sumac

Italy,	250 pks.	Union L. Co., Ld.
,,	100	W. Shelcott

Tanners' Bark

New Zealand,	8 t.	L. & I. D. Jt Co.
,,	45	Baxter & Hoare
Natal,	1	Hicks, Nash & Co.
Ceylon,	15	Prop. Sun Wf.
U. S.,	1	W. Jacques

Valonia

Greece,	42 t.	J. Graves
,,	70	Mavro, Valieri & Co.

Farina—

Holland,	40 pks.	J. Knill & Co.
Brazil,	1000	C. F. Webster & Co.
Italy,	420	L. Sutro & Co.

Glucose—

Holland,	40 pks.	40 c.	Prop. Hays Wf.
U. S.,	300	1136	Soundy & Son
,,	250	250	L. & N.-W. Ry. Co.
,,	400	2181	F. J. Warren
,,	50	250	L. Sutro & Co.
,,	500	500	R. G.
,,	150	150	Beresford
,,	13	70	Beck & P
Germany,	20	1600	Prop. Ch
France,	500	500	J. Barber

Iron Oxide—

Holland,	672 pks.	T. Blac

Manganese—

Hiogo,	3 t.	Elkan

Manure—

Germany,	10 t.	Beresford

Naphtha—

France,	16 drs.	Lister &

Ochre—

Belgium,	2 hgs.	O'Hara &

Olive Oil—

Italy,	2 tuns	H. Johnson &
,,	22 gls.	Van Oppen

Painters' Colours—

Germany,	16 pks.	T.
U. S.,	3	L. & I. D.
France,	11	Bennett S.
Singapore,	27	L. & I. D.
Holland,	3	R. Baelz
,,	6	Hernu, Peron
Germany,	17	L. & I. D.
,,	25	Wilkinson
,,	4	C. Atkins &
France,	4	Hernu, Peron
Italy,	8	E. & E.
France,	8	Flageollet
U. S.,	9	J. Watson

Paraffin Wax—

U. S.,	810 brls.	H. Hill
,,	350	Mordaunt
,,	5054	J. H. Usmar
,,	58	Page, Son &
,,	60	C. Ogleby
Rangoon,	261 cs.	H. Hill
U. S.,	25 brls.	W

Phosphate Rock—

Belgium,	200 t.	D. de Pass
France,	172	A. Hunter
U. S.,	400	Wyllie & C

Phosphate of Lime—

France,	46 pks.	Carter, Pa

Pitch—
Germany, 42 brls. C. B. Leighton
Denmark, 120 cks. M. D. Co,
France, 287 brls. C. B. Leighton
Germany, 5 css. H. Johnson & Co.
Plumbago—
Germany, 20 cs. J. Hinrichs
,, 170 Prop. Scott's Wf.
,, 10 Poth, Hill & Co.
,, 20 brls. J. Thredder, Son & Co.
Holland, 59 cks. B Gallaway
Ceylon, 372 brls. J. Thredder, Son & Co.
Germany, 20 cks. Le Sueur & Co.
Potassium Carbonate—
France, 21 drs. Beresford & Co.
Holland, 300 c. Spies Bros. & Co.
Potassium Muriate—
Germany, 300 pks. F. W. Berk & Co.
,, 600 Anglo Cntnl. G. Wks.
Potassium Sulphate—
Germany, 100 pks. F. W. Berk & Co.
Quicksilver—
Spain, 120 btls. L. & I. D. Jt. Co.
Saltpetre—
Germany, 211 cks. P. Hecker & Co.
,, 60 J. Hill & Son
Sodium Silicate—
Germany, 35 pks. Beresford & Co.
Sugar of Lead—
Germany, 84 pks. Beresford & Co.
,, 16 Petri Bros.
Tartaric Acid—
Holland, 5 pks. Middleton & Co.
Italy, 40 W. C. Bacon & Co.
Turpentine—
N. Russia, 103 brls. F. & T. Chiesman & Co.
,, 51 W. Caudery & Co.
Ultramarine—
Holland, 4 cs. Haeffner, Hilpert & Co.
,, 4 W. Harrison & Co.
Varnish—
U. S., 3 pks. J. Watson & Co.
,, 5 Stand. Varnish Wks.
Belgium, 10 Stobbs, Wilson & Co.
White Lead—
Holland, 13 cks. Spies, Bros. & Co.
,, 29 Burrell & Co.
Germany, 5 Spies, Bros. & Co.
,, 34 S. H. Willoughby
,, 6 cs. Grosscwith & Ludbolt
Zinc Oxide—
Holland, 500 cks. Soundy & Son

LIVERPOOL.

Week ending January 7th.

Acetic Acid—
Rotterdam, 5 btls.
Ammonia—
In transit, 1 dm.
Barytes—
Rotterdam, 21 cks.
Antwerp, 10 bgs.
In transit, 164 cks.
Borate of Lime—
Valparaiso, 700 bgs.
Caoutchouc—
Bahia, 94 bgs.
Caustic Potash—
Dunkirk, 25 dms.
Chemicals *(otherwise undescribed)*
Rotterdam, 1 ck.
Copper Pyrites—
Huelva, 1230 t. Matheson & Co.
Cream of Tartar—
Tarragona, 5 hds.
Dyestuffs—
Algarobilla
Huasco, 392 bgs.
Valparaiso, 217 W. Rea
Argols
Bordeaux, 56 cks.
Extracts
New York, 25 bxs. 15 brls.
Myrabolams
Bombay, 667 bgs. Forbes, Forbes, & Co.
,, 378 A. Salmon & Co.
Sumac
Barcelona, 100 sks. Ruffer & Son
Valonia
Smyrna, 68 bgs. Mavro, Valeira & Co.
,, 801
Farina—
Hamburg, 1 sk.
Halifax, 1500
Horn Piths—
B. Ayres, 14560 Williamson, Milligan & Co.
Iodine—
Valparaiso, 104 brls. Gibbs & Son
Litharge—
Rotterdam, 22 cks.
Phosphate—
Ghent, 200 bgs.
Pitch—
Marseilles, 120 cks.
Dunkirk, 1725 bdls. 54
Potash—
Portland, M., 25 brls.
Rotterdam, 1 ck.
Potash Salts—
Hamburg, 508 bgs.
Potassium Carbonate—
Hamburg, 11 cks.
Potassium Prussiate—
Rotterdam, 2 cks.
Saltpetre—
Calcutta, 350 bgs.
Soap—
Boston, 5 css. Boots Drug Co.
Philadelphia, 900 bxs. 63 crts.
Marseilles, 7 css.
Constantinople, 2
Stearine—
Antwerp, 13 bgs.
Tartar—
Valparaiso, 19 bgs.
Tartaric Acid—
Marseilles, 2 cks.
Rotterdam, 3
Ultramarine—
Rotterdam, 11 css.
Vaseline—
New York, 50 css. Cheesbro Mnfg. Co.
Waste Salt—
Hamburg, 2032 bgs.
White Lead—
Rotterdam, 47 cks.
Zinc Oxide—
Bordeaux, 10 cks.
Antwerp, 50 brls. J. T. Fletcher & Co.

GLASGOW.

Week ending January 7th.

Barytes Sulphate—
Antwerp, 303 bgs.
Cream of Tartar—
Marseilles, 7 cks.
Dyestuffs *(otherwise undescribed)*
Boston, 100 bxs.
Dyestuffs—
Argols
Bordeaux, 5 cks.
Extracts
Antwerp, 14 cks.
Farina—
Stettin, 550 bgs.
Glucose—
Calcutta, 49 brls.
Manganese—
Rotterdam, 3 cks.
Phosphate of Lime—
Antwerp, 100 t.
Stearine—
Antwerp, 63 bgs.
Sulphur Ore—
Seville, 355 t. Seville Sulphur Co.
Tartar—
Oporto, 8 cks.
Marseilles, 3
White Lead—
Rotterdam, 3 cks.
Zinc Oxide—
Antwerp, 75 cks.
Zinc White—
Rotterdam, 100 cks.

TYNE.

Week ending January 2nd.

Alum Earth—
Hamburg, 35 cks. Tyne S. S. Co.
Phosphate—
Antwerp, 290 t.
Plumbago—
Antwerp, 1 bg.
Salt—
Hamburg, 15 bgs. Tyne S. S. Co.
Harburg, 140 t.
Stearine—
Antwerp, 3 bgs. Tyne S. S. Co.
Sulphur Ore—
Pomaron, 1375 t. Mason & Barry

HULL.

Week ending December 31st.

Acetic Acid—
Rotterdam, 23 btls. Lawson & Son
Barytes—
Antwerp, 10 cks. Bailey & Leetham
Bremen, 20 G. Holmes & Co.
Binitrobenzol—
Rotterdam, 6 cs. Lawson & Son
Chemicals *(otherwise undescribed)*
Stettin, 19 cks. Wilson, Sons & Co.
Danzig, 17 ,, ,,
Hamburg, 4 pks. ,, ,,
Dyestuffs—
Alizarine
Rotterdam, 81 pks. W. & C. L. Ringrose
,, 20 brls. G. Lawson & Son
,, 40 Hutchinson & Son
Logwood
Boston, 50 bxs. Wilson, Sons & Co.
Farina—
Stettin, 200 bgs. Wilson, Sons & Co.
Glucose—
New York, 100 brls. Wilson, Sons & Co.
Stettin, 40 cks. ,, ,,
Naphthol—
Rotterdam, 5 brls. Wilson, Sons & Co.
Phosphate—
Dunkirk, 100 bgs.
Pitch—
Rotterdam, 58 cks. H. F. Pudsey
Plumbago—
Hamburg, 20 cks. Wilson, Sons & Co.
Saltpetre—
Hamburg, 2 brls. Wilson, Sons & Co.
Tartaric Acid—
Rotterdam, 5 cks. Lawson & Son
Ultramarine—
Rotterdam, 4 cks. Hutchinson & Son
Varnish—
New York, 20 brls. Wilson, Sons & Co.
Waste Salt—
Hamburg, 60 brls. Wilson, Sons & Co.
White Lead—
Rotterdam, 10 cks. Hanger, Watson & Harris
Zinc Oxide—
Hamburg, 12 cks. Hanger, Watson & Harris

GOOLE.

Week ending December 23rd.

Acetic Acid—
Rotterdam, 2 css.
Alum—
Rotterdam, 20 cks.
Dyestuffs *(otherwise undescribed)*
Boulogne, 7 cs. 60 cks.
Dyestuffs—
Alizarine
Rotterdam, 8 cks.
Farina—
Hamburg, 1300 bgs.
Deffszyhe, 850
Potash—
Dunkirk, 9 cks.
Calais, 11
Saltpetre—
Rotterdam, 100 bgs.

GRIMSBY.

Week ending December 26th.

Chemicals *(otherwise undescribed)*
Hamburg, 3 pks.
Rotterdam, 17
Antwerp, 10 cks.
Dyestuffs—
Indigo
Rotterdam, 29 pks.

EXPORTS OF CHEMICAL PRODUCTS

OF

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending January 2nd.

Acetic Acid—
Sydney, 1 . 14 c. £42
Melbourne, 3 4 85
Acid—
Cologne, 200 btls. £300
Alkali—
Algoa Bay, 1 t. 7 c. £6
Alum—
Varna, 9 t. 19 c. 54
Ammonia—
Natal, 12 drs. £11
Ammonium Carbonate—
Cologne, 13 c. £18
Bombay, 3 7
Ammonium Sulphate—
Bordeaux, 10 t. 2 c. £105
Hamburg, 101 16 1,100
Baltimore, 25 6 290
Ghent, 60 630
Arsenic—
Wellington, 10 c. £7
Sevastopol, 12 8
Amsterdam, 6 cks. 16
Melbourne, 10 t. 140
Barytes Nitrate—
New York, 3 t. £59
Bisulphite of Lime—
Rangoon, 1 t. 17 c. £45
Bombay, 2 12 32
Bleaching Powder—
Antwerp, 2 t. 12 c. £72
Borax—
Sydney, 2 t. 2 c. £64
Hamburg, 8 cks. 62
Melbourne, 5 250

Boracic Acid—
Melbourne, 1 t. £40
Calcium Chloride—
Cape Town, 13 drs. £14
Carbolic Acid Crystals—
Rotterdam, 10 t. £500
New York, 15 cks. 44
Yokohama, 6 15 c. 308
Carbon Bisulphide—
Antwerp, 6 t. 18 c. £86
Caustic Potash—
Melbourne, 1 t. 14 c. £40
Caustic Soda—
Natal, 16 c. £25
Hong Kong, 4 8
Algoa Bay, 8 20
Melbourne, 3 t. 7 70
Canterbury, 6 7
Auckland, 4 6 142
Chemicals *(otherwise undescribed)*
Algoa Bay, 4 cs. £70
Adelaide, 3 cks. 23
Vigo, 8 c. 13
Natal, 1 kg. 9
Citric Acid—
Odessa, 8 kgs. £61
Adelaide, 10 c. 77
Rotterdam, 2 cks. 70
Hamburg, 5 2 110
Barcelona, 2 76
Genoa, 4 144
Rangoon, 1 cs. 6
Lisbon, 6 43
Coal Products—
Carbolineum
Hamburg 200 brls. £95
Aniline Oil
New York, 22 drs. 2 cks. £1,065
Rio de Janeiro, 57 pks. 49
Melbourne, 1 cs. 17
Aniline Salts
Cologne, 4 cks. 35
New York, 62 550
Anthracene
Dusseldorf, 284 cks. £2,573
Rotterdam, 38 338
Benzol
Rotterdam, 30 pks. 20 pns. £485
Boulogne, 18 352
Coal Tar Dyes
Hiogo, 10 cs. £103
Creosote
Boulogne, 2 pks. 1 cs. £37
Naphtha
Rotterdam, 10 pns. 51 rnlts. £320
Naphthaline
Hamburg, 6 cks. £50
Treport, 50 53
Libau, 5 28
Pitch
Odessa, 100 brls. £31
Salonica, 25 10
Bordeaux, 917 t. 1,513
Cadiz, 1,157 2,560
Rangoon, 25 cks. 12
Dunkirk, 426 830
Halifax, 177 120
Baltimore, 200 bgs. 50
Boston, 490 10 dms. 317
New York, 1,000 409
Mauritius, 28 pks. 14
Rouen, 100 175
Sydney, 40 brls. 25
Tar
Mauritius, 25 rnlts. £15
Natal, 150 33
Melbourne, 210 drs. 48
Danzig, 250 brls. 160
Nagasaki, 12 26
Tar Salts
Hamburg, 23 cks. £30
Toluol
Rotterdam, 10 pns. £89
Treport, 27 brls. 77
Copperas—
Constantinople, 9 t. 4 c. £20
Varna, 7 7 16
Townsville, 67 brls. 26
Copper Sulphate—
Varna, 2 t. 15 c. £40
Bordeaux, 20 14 281
Fremantle, 23 345
Cream of Tartar—
Melbourne, 45 kgs. £215
Cape Town, 5 c. 22
Sydney, 60 83 pks. 736
Guano—
Jersey, 7 t. £94
Manure—
Jersey, 153 t. £1 223
Mercuric Oxide—
Sevastopol, 10 c. £140
Muriatic Acid—
Antwerp, 3 t. 9 c.
Nitric Acid—
Shanghai, 2 cks. £13
Phosphate—
Lisbon, 80 t. £165
Phosphorus—
Wellington, 5 cs. £34
Melbourne, 10 121
Picric Acid—
Shanghai, 1 t. 7 c. £235
Potassium Bromide—
Genoa, 10 c. £57
Potassium Chlorate—
Odessa, 1 t. £48
Hiogo, 10 460
Potassium Cyanide—
Shanghai, 5 cks. £27
Hong Kong, 5 css. 18
Potassium Permanganate—
New York, 2 t. 2 c. £124
Potassium Prussiate—
Boston, 4 c. £20
Potassium Sulphate—
St. Kitts, 1 t. £11
Antigua, 1 11
Madeira, 3 pks. 9
Salammoniac—
Bagdad, 1 t. 1 c. £35
Constantinople, 4 2 132
Varna, 4 16 135
Shanghai, 10 cks. 45
Salt Cake—
Melbourne, 27 t. 14 c. £76
Saltpetre—
Natal, 10 c. £12
Wellington, 9 10
Bahia, 4 t. 1 91
Rio, 4 18 110
Melbourne, 1 10 33
Silver Nitrate—
Hong Kong, 2 cs. £30
Soda—
Demerara, 7 c. £2
Sydney, 6 55
Canterbury, 16 t. 5 60
Soda Ash—
Mahé, 20 t. 17 c. £94
Soda Crystals—
Wellington, 10 c. £2
Algoa Bay, 10 2
Newcastle, 15 t. 53
Sydney, 30 10 106
Soda Salts—
Melbourne, 2 c. 17
Sodium—
Ghent, 9 c. £103
Sodium Bicarbonate—
Tamatave, 1 t. 1 c. £15
Auckland, 1 8
Bombay, 3 7
Sodium Hyposulphite—
B. Ayres. 8 c. £4
Sodium Phosphate—
Genoa, 2 t. 6 c. £33
Sodium Sulphite—
Boston, 7 c. £4
Lyttleton 1 3
Sulphur Dioxide—
New York, 2 t. 5 c. £60
Sulphuric Acid—
Bombay, 18 cs. £24
Madras, 30 22
Brisbane, 10 17
Antwerp, 5 t. 7 c.
Algoa Bay, 20 cs. 14
E. London, 24 20
Aden, 10 14
Superphosphates—
St. Kitts, 4 t. 6 c. £13
Antigua, 3 10 11
Jersey, 6 16
Mauritius, 233 13 1,044
Tartaric Acid—
Kurachi, 1 t 7 c. £173
Melbourne, 20 kgs. 114
Adelaide, 1 118
Aden, 2 14
Brisbane, 10 40
Sydney, 2 10 20 396

LIVERPOOL.

Week ending December 31st.

Acetic Acid—
Canada, 8 c. 2 q. £20
St. Johns, N'fld, 10 brls. 38
Alum—
Halifax, 2 t. 19 c. £15
Madras, 3 12 18
Malta, 2 1 10
Beyrout, 1 10 8
Algiers, 2 1 10
Bari, 19 5
Seville, 2 1 1 q. 10
Bombay, 9 9 51
Smyrna, 50 cks. 29
Alexandria, 10 100 128
Ammonia—
Boston, 5 c. 2 q. £13
Ammonium Carbonate—
Leghorn, 12 c. £20
B. Ayres, 10 15
Matanzas, 6 10
Ammonium Muriate—
San Francisco, 4 t. 16 c. £96
B. Ayres, 2 14 3 q. 62
Ammonium Nitrate—
Halifax, 1 t. 14 c. £145
Ammonium Sulphate—
Huelva, 2 t. 1 c. 2 q. £21
Leghorn, 10 1 120
Alicante, 10 9 109
Amsterdam, 50 520
TornayCharente, 50 608
Barcelona, 10 1 1 109
Bordeaux, 48 14 376
Malaga, 51 1 2 558
Marseilles, 2 1 2 21
Boston, 76 2 805
New York, 127 18 2 1,360
Demerara, 17 2 191
Valencia, 279 16 2 3,050
Souerabaya, 50 7 580
Bleaching Powder—
Baltimore, 139 cks.
Boston, 349
Calcutta, 102 css.
Genoa, 8
Messina, 8
Naples, 8
Oporto, 3 brls.
Philadelphia, 96
San Sebastian, 12
New York, 344
Borax—
Antwerp, 5 t. 1 q. £148
Brimstone—
Boston, 50 t. 2 c £254
Calcutta, 7 10 51
Madras, 10 1 78
Calcium Chlorate—
B. Ayres, 2 t. 9 c. £5
Caustic Soda—
Acajutla, 12 dms.
Batavia, 38
Bombay, 17
Bremen, 10 brls.
Carupano, 15
Catania, 40
Demerara, 12
Fiume, 10
Genoa, 40
Havana, 50
Hiogo, 75
Kurachi, 8
Malaga, 87 10 cks.
Messina, 99
Naples, 10
Palermo, 30
Pasages, 108
Rotterdam, 5
Syra, 50
Valencia, 32
Alicante, 74 10
Barcelona, 130 30
Batoum, 300
Boston, 100
Ceara, 20
Leghorn, 45
Lisbon, 80
Nantes, 173
New York, 1,101 4 190
Rouen, 166
San Sebastian, 140
Seville, 36
Sofia, 35
Vera Cruz, 150
Chemicals *(otherwise undescribed)*
Alexandria, 2 t. £66
Hamburg, 9 17 c. 2 q. 296
Portland, 8 8 1 253
Rotterdam, 2 12 3 80
Mersyne, 1 6 2 33
Naples, 4 1 9
Rangoon, 12 3 20
Chrome Acetate—
Naples, 9 c. 1 q. £26
Citric Acid—
Sydney, 5 c. £37
Copper Sulphate—
Halifax, 1 t. 4 c. 3 q. £24
Leghorn, 2 10 1 38
Rosario, 1 3 3 16
Marseilles, 499 1 7,508
Genoa, 9 89 133
Ghent, 20 133
Rouen, 212 4 3,204
Bordeaux, 9 18 136
Venice, 3 2 1 56
Copperas—
Piræus, 8 t. £18
Beyrout, 3 7
Rio de Janeiro, 2 19 c. 7
Calcutta, 30 67
Cream of Tartar—
Santos, 12 c 2 q. £19
Epsom Salts—
Rio de Janeiro, 1 kgs.
Alexandria,
Bombay, ks.
Guano—
Malaga, 20 £100
Gypsum—
New York, 64 4 c. £201
Iron Oxide—
Calcutta, 22 14 c. 2 q. £48
New York, 5 3 120
Magnesium Carbonate—
Seville, 10 c. £8
Magnesium Chloride—
Rouen, 10 t. 7 c. £95
Manure—
Hamburg, 40 t. 10 c. £221
Havre, 49 5 118
Gd. Canary, 15 46
Antwerp, 9 17 32
Valencia, 50 13 2 q. 173
New York, 10 70
Lauderneau, 150 3 553
Malaga, 10 100
Penang, 42 16 2 356
Nitre Cake—
Taltal, 9 t. 17 c. £27
Oxalic Acid—
Barcelona, 8 t. 19 c. £215
Bilbao, 3 6
Syra, 4 cks. 16
Dunkirk, 5 1 2 q. 140
Phosphate—
Hamburg, 33 t. 17 c. 3 q. £370
Phosphorus—
Vera Cruz, 8 cs. £83
Hiogo, 15 192
Picric Acid—
New York, 6 c. £18
Potashes—
Corral, 17 c. £73
Potassium Bichromate—
Bilbao, 3 c. £6
Piræus, 2 t. 11 3 q. 54
B. Ayres, 8 15
Potassium Carbonate—
Boston, 7 t. £98
Potassium Chlorate—
New York, 15 t. £700
Carril, 1 46
Mollendo, 10 c. 24
Sydney, 7 10 394
Antwerp, 1 41
Ghent, 1 47
Leghorn, 10 23
Messina, 2 5
Vera Cruz, 1 10 62
Rotterdam, 2 10 118
Kobe, 20 911
Hiogo, 2 10 100 cks. 343
Salammoniac—
Volo, 9 c. £15
Palermo, 10 18
San Francisco, 2 t. 3 q. 95
New York, 9 13 1 329
Salt—
Bakana, 20 t.
Boston, 403
Brisbane, 1
B. Ayres, 3¼
Copenhagen, 845
Demerara, 62
Ghent, 417
Gd. Bassam, 5
Kingston, Ja., 25½
Pt. Natal, 5
Rio de Janeiro, 36
Rosario, 2
Sherbro, 42½
Wilmington, 250
Antwerp, 25
Baltimore, 91
Barbadoes, 24
Calcutta, 1,353 t.
Dunedin Wharf, 60
Galveston, 300
Newcastle, 265
Philadelphia, 100

l, M., 80
l, Or., 290
n, 10
am, 182
s, Nfld., 10
ih, 220

te—
39 t. 19 c. £107
re, 19 12 52
re—
10 c. £11
legre, 17 3 q. 20
rideo, 6 6
10 11
1 t. 27
6 bxs.
Bay, 980 5 bdls. 150 css.
h, 253 34
3
400
ca, 20
th, 50
ck, 100
Long, 20
n, Ja., 1,900 2
1,000
Bay, 100 1
200
itonio, 50
ai, 350
ia, 170
1
oes, 250
na, 2
r, 2,832 12
5
own, 160
150
nary, 537
240
13
50
ork, 2
onio, 100
25 brls.

Alkali—
na, 70 brs.
98
a, 20
p. 5 cks.
ash—
ore, 279 tcs. 277 cks.
50
ork, 336 400 bgs.
Janeiro, 50 brls.
h, 15 176
38
20
8
nam, 10
rystals—
y, 250 kgs.
d, Me., 6 css.
alts—
York, 3 t 10 c. £38
a Bicarbonate—
y, 200 kgs.
ux, 60
ta, 1,499
1,800
hi, 745
s, 25
s, 35 8 cks.
ital, 20
ang, 10
ad, 100
s 100
ama, 1,000
ar, 20
on, 20
dam, 32
a Bichromate—
h, 19 c. £23
19 3 q. 22
1 t. 2 28
a Carbonate—
h, 84 brls.
a Chlorate—
York, 5 t. £299
rp, 1 59
dam, 10 c. 30
a Nitrate—
h, 1 t. 18 c. 3 q. £18
Janeiro, 5 3 47
a Silicate—
ntinople, 4 brls.
55
h, 5 cks.
s 32
ca, 15
of Lead—
s 2 t. 2 c. 2 q. £42

Sulphur—
Halifax, 2 t. 7 c. 2 q. £22
Havana, 17 8
Rouen, 186 18 1,420
Iquitos, 10 5
Ceara, 10 6
Sulphuric Acid—
Talcahuano, 1 t. 15 c. £6
Tartar—
Hamburg, 1 t. 10 c. £80
Tartaric Acid—
Bombay, 1 cs. £13

GLASGOW.

Week ending January 7th.

Acids—
Bombay, 17 t. £130
Alkali—
Wellington, 11¼ t. £67
Ammonia—
Hong Kong, 2 t. 5 c. £84
Ammonium Sulphate—
La Rochelle, 60 t. 12 c. £630
Demerara, 225 2½ 2,380
Valencia, 308 ¼ 3,355
Bordeaux, 30 6½ 306
Benzol—
Rotterdam, 32 dms. £450
Caustic Soda—
Wellington, 18 t. 18 c. £106
Coal Tar—
Straits, 34 t. 14 c. £77
Coal Tar Pitch—
Rouen, 117 t 17 c. £176
St. Nazaire, 1,008 13 1,663
St. Malo, 260 380
La Rochelle, 611 3 1,008
Bordeaux, 74 13½ 150
Dyestuffs—
Argols
Wellington, 10½ c. £26
Extracts
Boston, £20
Gambier
Wellington, 20¼ c. £26
Indigo
Wellington, 4¼ c. £90
Logwood
Wellington, 289½ c. £172
Valonia
Wellington, 20¼ c. £20
Fertilizers—
Cullera, 296 t. 9 c. £2,400
Valencia, 2,420
Glucose—
Wellington, 1 t. 19¾ c. £28
Guano—
Cullera, 10 t. ¾ c. £85
Manure—
Mauritius, 250 t. £2,250
Straits, 50 360
Barbadoes, 81½ 845
Demerara, 262 7¾ c. 2,915
Valencia, 20 14 210
Naphtha—
Rouen, 6 t. 16 c. £97
Painters' Colours—
Calcutta, 2½ t. £51
Mauritius, 2 7¼ c. £43. 12s.
Straits, 6 ½ £81
Penang, 4 3½ 48
Japan, 7 2 113
Demerara, £40. 13s.
Pt. Natal, £29
Paraffin Wax—
Wellington, 5 t. 18¼ c. £200
Barcelona, 28 3 935
Bilbao, 7¼ 20¼ 604
Rouen, 52 6 1,754
Nantes, 25 6¼ 785
Japan, 49 6¾ 1,455
Valencia, 14 6¼ 513
,, 268
Bordeaux, 20 15 627
Pitch—
Cullera, 1,107 t. £1,462
Amsterdam, 154 193
Potassium Bichromate—
Wellington, 15¾ c. £25
Japan, 3 t. 83½ 225
Rouen, 76 1 1,841
Nantes, 10 18½ 275
Valencia, 88 3¾ 1,420
Rotterdam, 121 cks. 1,145
Salt—
Pt. Natal, 300 t. £291
Soap—
New York, 80¼ c. £70
Soda Ash—
Wellington, 97 c. £32
Sodium Bichromate—
New York, 191 c. £245
Valencia, 43¼ 50
Sulphur—
Demerara, 3 t. 13 c. £30
Sulphuric Acid—
Rangoon, 34 t. 4¼ c. £236
Philippines, 4 20
Trinidad, 2 25
Demerara, 3 7 37½
Tar—
Pt. Natal, 1,400 glns. £21
White Lead—
Calcutta, 2 t. £40
Wellington, 5 18½ c. 144

GOOLE.

Week ending December 23rd.

Alkali—
Dunkirk, 30 dms.
Benzol—
Dunkirk, 45 cks.
Rotterdam, 46
Bleaching Powder—
Antwerp, 15
Chemicals *(otherwise undescribed)*
Ghent, 8 cks.
Hamburg, 5 11 dms.
Rotterdam, 1
Coal Products—
Antwerp, 16 cks.
Treport, 52
Dyestuffs *(otherwise undescribed)*
Boulogne, 1 ck. 2 cs.
Ghent, 2 2 dms. 2 tins
Rotterdam, 20 2 css.
Manure—
Ghent, 432 bgs.
Pitch—
Antwerp, 521 t.

HULL.

Week ending December 29th.

Alkali—
Hamburg, 20 cks.
Borax—
Riga, 20 cks.
Calcium Sulphate—
Antwerp, 100 bgs.
Caustic Soda—
Christiania, 1 drm
Libau, 74
Riga, 423
Chemicals *(otherwise undescribed)*
Amsterdam, 1 cs.
Boston, 100 cks.
Copenhagen, 13
Christiania, 39 5 4 crbys pks
Dunkirk, 49
Gothenburg, 85 30 cs.
Hango, 2
Hamburg, 40 18
Libau, 2
Rouen, 15
Rotterdam, 10 2,420 bgs.
Riga, 127 154
Stettin, 45 1 pk.
Cotton Seed Oil—
Antwerp, 1,582 c.
Bergen, 7
Bremen, 200
Dunkirk, 135
Ghent, 20
Hamburg, 1,230
Konigsberg, 200
Dyestuffs *(otherwise undescribed)*
Dunkirk, 1 ck.
Hamburg, 2 132 bgs.
Rotterdam, 1
Riga, 1
Stettin, 2 167
Linseed Oil—
Bergen, 51 c.
Bremen, 48
Copenhagen, 17
Christiania, 186
Drontheim, 89
Hamburg, 52
Stettin, 4
Manure—
Dunkirk, 784 bgs.
Ghent, 500
Rouen, 250
Painters' Colours—
Antwerp, 53 cks. 13 dms.
Amsterdam, 3
Bergen, 1
Copenhagen, 1 2 1 cs.
Dunkirk, 1
Hamburg, 4
New York, 175
Rotterdam, 30 2 pks. 1
Riga, 1
Stettin, 63 15
Pitch—
Antwerp, 233 t.
Tar—
Antwerp, 1 ck.
Varnish—
Antwerp, 1 css.
Amsterdam, 11 cks.
Gothenburg, 1
Hango, 2 dms.

GRIMSBY.

Week ending December 26th.

Chemicals *(otherwise undescribed)*
Antwerp, 5 cks.
Dieppe, 2 drs.
Hamburg, 1 cs. 8 btls.
Rotterdam, 8
Coal Products—
Dieppe, 3 drs.
Dyestuffs *(otherwise undescribed)*
Antwerp, 2 cks.

TYNE.

Week ending January 2nd.

Alkali—
Amsterdam, 512 c.
Alum—
Copenhagen, 2 c.
Ammonia Alkali—
Barcelona, 245 c.
Ammonium Carbonate—
Hamburg, 11 c.
Ammonium Sulphate—
Hamburg, 600 c.
Arsenic—
Venice, 100 c.
Barcelona, 40
Barytes—
Dunkirk, 317 c.
Barytes Carbonate—
Hamburg, 3,692 c.
Binoxide of Barium—
New York, 20 c.
Bleaching Powder—
Dunkirk, 203 c.
Antwerp, 183
Copenhagen, 808
Rotterdam, 112
Gothenburg, 48
Amsterdam, 73
New York, 4,332
Christiania, 128
Caustic Soda—
Batoum, 3,302 c.
Barcelona, 360
Gothenburg, 98
New York, 5,223
Lisbon, 210
Gypsum—
New York, 2,966 c.
Litharge—
Hamburg, 1 c
Barcelona, 11
Christiania, 132
Oxalic Acid—
Copenhagen, 9 c
Soda—
Randers, 150 c.
Jersey, 107
Arendal, 21
Soda Ash—
Dunkirk, 119 c.
Venice, 1,316
Odessa, 103
Christiania, 14
Sodium Sulphate—
Rotterdam, 202 c.
Sulphur—
Rotterdam, 3,000 c.
Christiania, 600
Superphosphate—
Venice, 2,001 c.
White Lead—
New York, 1,008 c.

PRICES CURRENT.

WEDNESDAY, JANUARY 13,

PREPARED BY HIGGINBOTTOM AND CO., 116, PORTLAND STREET, MANCHESTER.

The values stated are F.O.R. at maker's works, or at usual ports of shipment in U.K. The price in different localities may

	£ s. d.
Acids:—	
Acetic, 25 °/₀ and 40 °/₀ .. .. per cwt.	7/- & 11/-
,, Glacial .. .. ,,	50/-
Arsenic, S.G., 2000° .. .. ,,	0 13 6
Fluoric .. .. per lb.	0 0 3¾
Muriatic (Tower Salts), 30° Tw. .. .. .. per bottle	0 0 10
,, (Cylinder), 30° Tw. .. .. ,,	0 3 0
Nitric 80° Tw. .. .. per lb.	0 0 2¼
Nitrous .. .. ,,	0 0 1¾
Oxalic .. .. nett ,,	0 0 3⅛
Phosphoric, 1750° .. .. ,,	0 0 11½
Picric .. .. ,,	0 0 10¼
Sulphuric (fuming 50 °/₀) .. .. per ton	15 10 0
,, (monohydrate) .. .. ,,	5 10 0
,, (Pyrites, 168°) .. .. ,,	3 5 0
,, (,, 150°) .. .. ,,	1 5 0
,, (free from arsenic, 145°) .. .. .. ,,	1 7 6
Sulphurous (solution) .. .. ,,	2 15 0
Tannic (pure) .. .. per lb.	0 1 2
Tartaric .. .. ,,	0 1 1
Arsenic, white powdered .. .. nett per ton	11 0 0
Alum (loose lump) .. .. ,,	5 5 0
Alumina Sulphate (pure) .. .. ,,	5 0 0
,, ,, (medium qualities) .. .. .. ,,	4 15 0
Aluminium .. .. per lb.	2s. 8d. to 0 3 2
Ammonia, ·880=28° .. .. per lb.	0 0 3
,, =24° .. .. ,,	0 0 1¾
,, Carbonate .. .. nett ,,	0 0 3½
,, Muriate .. .. per ton	21 0 0
,, ,, (sal-ammoniac) 1st & 2nd .. per cwt.	35/- & 33/-
,, Nitrate .. .. per ton	40 0 0
,, Phosphate .. .. per lb.	0 0 10½
,, Sulphate (grey), London .. .. .. per ton	10 10 0
,, ,, (grey), Hull .. .. ,,	10 10 0
Aniline Oil (pure) .. .. per lb.	0 0 8½
Aniline Salt ,, ... ,,	0 0 7
Antimony .. .. per ton	70 0 0
,, (tartar emetic) .. .. per lb.	0 1 0
,, (golden sulphide) .. .. ,,	0 0 10
Barium Chloride .. .. per ton	7 15 0
,, Carbonate (native) .. .. ,,	3 10 0
,, Sulphate (native levigated) .. .. .. ,,	45/- to 75/-
Bleaching Powder, 35 % .. .. nett ,,	7 10 0
,, Liquor, 7 % .. .. ,,	2 10 0
Bisulphide of Carbon .. .. ,,	11 15 0
Chromium Acetate (crystal .. .. per lb.	0 0 6
Calcium Chloride .. .. per ton	2 5 0
China Clay (at Runcorn) in bulk .. .. .. ,,	17/6 to 35/-
Coal Tar Dyes:—	
Alizarine (artificial) 20 % .. .. per lb.	0 0 8¼
Magenta .. .. ,,	0 3 9
Coal Tar Products	
Anthracene, 30 % A, f.o.b. London .. per unit per cwt.	0 1 2½
Benzol, 90 % nominal .. .. .. per gallon	0 1 11
,, 50/90 ,, ... ,,	0 1 9
Carbolic Acid (crystallised 40°) .. .. .. per lb.	0 0 5⅛
,, (crude 60°) .. .. per gallon	0 1 2
Creosote (ordinary) .. .. ,,	0 0 1½
,, (filtered for Lucigen light) .. .. ,,	0 0 3
Crude Naphtha 30 % @ 120° C. .. .. .. ,,	0 1 1
Grease Oils, 22° Tw. .. .. per ton	2 5 0
Pitch, f.o.b. Liverpool or Garston .. .. .. ,,	1 14 0
Solvent Naphtha, 90 % at 160° .. .. .. per gallon	0 1 2
Coke-oven Oils (crude) .. .. ,,	0 0 3
Copper .. .. per ton	45 15 0
,, Sulphate .. .. ,,	14 15 0
,, Oxide (copper scales) .. .. ,,	45 0 0
Glycerine (crude) .. .. ,,	15 0 0
,, (distilled S.G. 1250°) .. .. ,,	50 0 0
Iodine .. .. nett, per oz.	0 0 9
Iron Sulphate (copperas) .. .. per ton	1 12 6
,, Sulphide (antimony slag) .. .. ,,	2 0 0
Lead (sheet) for cash .. .. ,,	12 12 6
,, Litharge Flake (ex ship) .. .. ,,	15 0 0
,, Acetate (white ,,) .. .. ,,	26 10 0
,, ,, (brown ,,) .. .. ,,	18 10 0
,, Carbonate (white lead) pure .. .. .. ,,	20 0 0
Nitrate .. .. ,,	20 10 0

	£
Lime, Acetate (brown) .. .. per ton	7
,, ,, (grey) .. .. ,,	10
Magnesium (ribbon and wire) .. .. per oz.	0
,, Chloride (ex ship) .. .. per ton	2
,, Carbonate .. .. per cwt.	1 1
,, Hydrate .. .. per ton.	17
,, Sulphate (Epsom Salts) .. .. .. per ton	3
Manganese, Sulphate .. .. ,,	17
,, Borate .. .. per cwt.	2 1
,, Ore, 70 % .. .. per ton	4
Methylated Spirit, 61° O.P. .. .. per gallon	0
Naphtha (Wood), Solvent .. .. ,,	0
,, ,, Miscible, 60° O.P. .. .. .. ,,	0
Oils:—	
Cotton-seed .. .. per ton	19 1
Linseed .. .. ,,	20
Lubricating, Scotch, 890°—895° .. .. ,,	7
Petroleum, Russian .. .. per gallon	0
,, American .. .. ,,	0
Potassium (metal) .. .. per oz.	0
,, Bichromate .. .. per lb.	0
,, Carbonate, 90% (ex ship) .. .. .. per ton	19
,, Chlorate .. .. per lb.	0
,, Cyanide, 98% .. .. ,,	0
,, Hydrate (Caustic Potash) 80/85 % .. per ton	22 1
,, ,, (Caustic Potash) 75/80 % .. ,,	21
,, ,, (Caustic Potash) 70/75 % .. ,,	20 1
,, Nitrate (refined) .. .. per cwt.	1
,, Permanganate .. .. per cwt.	3
,, Prussiate Yellow .. .. per lb.	0
,, Sulphate, 90 % (ex ship) .. .. .. per ton	9 1
,, Muriate, 80 % (do.) .. .. ,,	7 1
Silver (metal) .. .. per oz.	0
,, Nitrate .. .. ,,	0
Sodium (metal) .. .. per lb.	0
,, Carb. (refined Soda-ash) 48 % .. nett per ton	6
,, ,, (Caustic Soda-ash) 48 % .. ,, ,,	5
,, ,, (Carb. Soda-ash) 48% .. .. ,, ,,	5
,, ,, (Carb. Soda-ash) 58 % .. .. ,, ,,	6
,, ,, (Soda Crystals) .. .. .. ,, ,,	3
,, Acetate (ex-ship) .. .. ,,	18
,, Arseniate, 45 % .. .. ,,	10 1
,, Chlorate .. .. per lb.	0
,, Borate (Borax) .. .. nett, per ton.	28 1
,, Bichromate .. .. per lb.	0
,, Hydrate (77 % Caustic Soda) (f.o.b.) nett pr. ton (10 ton lots)	11 1
,, ,, (74 % Caustic Soda) ,, ,, ,, (10 ton lots)	11
,, ,, (70 % Caustic Soda) ,, ,, ,, (10 ton lots)	10
,, ,, (60 % Caustic Soda) .. ,, ,, (10 ton lots)	9
,, ,, (60 % Caustic Soda, cream) (f.o.b.) ,, (10 ton lots)	8 1
,, Bicarbonate .. .. ,,	6 1
,, Hyposulphite .. .. ,,	7 1
,, Manganate, 25% .. .. ,,	9
,, Nitrate (95 %) ex-ship Liverpool .. .. per cwt.	0
,, Nitrite, 98 % .. .. per ton	30
,, Phosphate .. .. ,,	15 15
,, Prussiate .. .. per lb.	0
,, Silicate (glass) .. .. per ton	5
,, ,, (liquid, 100° Tw.) .. .. .. ,,	4
,, Stannate, 40 % .. .. per cwt.	3
,, Sulphate (Salt-cake) .. .. per ton.	1 17
,, ,, (Glauber's Salts) .. .. ,,	1 15
,, Sulphide .. .. ,,	7 15
,, Sulphite .. .. ,,	6 12
Strontium Hydrate, 100% .. .. ,,	8 10
Sulphocyanide Ammonium, 95 % .. .. per lb.	0
,, Barium, 95 % .. .. ,,	0
,, Potassium .. .. ,,	0
Sulphur (Flowers) .. .. per ton.	10
,, (Roll Brimstone) .. .. ,,	8
,, Brimstone: Best Quality (nominal) .. ,,	6 10
Superphosphate of Lime (26 %) .. .. ,,	2 7
Tallow .. .. ,,	26 10
Tin (English Ingots) .. .. ,,	94
,, Crystals .. .. per lb.	0
Zinc (Spelter) .. .. per ton	22 7
,, Chloride (solution, 96° Tw.) .. .. ,,	6 15

THE

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AS A COMPLETE GOING CONCERN,

TUESDAY, 16th FEBRUARY, 1892.

AT THE MART, TOKENHOUSE YARD, LONDON, E.C.

L. COWAN & SONS, LIMITED, in liquidation, ersmith Bridge Soap Works, Barnes, London, S.W.

MEATLEY, KIRK, PRICE, & GOULTY

cted by the Liquidator, J. MILTON BROAD, Esq., to sell by PUBLIC N, on Tuesday, 16th February, 1892, at the MART, TOKENHOUSE YARD, E.C., at Half-past Two o'clock in the afternoon, the valuable and old d Soap Works, with the portion of Freehold Land, comprising about 4¾ shown on Block Plan and described in Schedule, AS A GOING N, together with the Plant and Machinery, Motive Power, Railway Horses and Carts, Wharf with frontage to River Thames of 150 feet, with ive, old established, and valuable Trade Connections.

nt and Machinery comprise 3 Lancashire Steam Boilers, 7 ft. diameter, 30 Lancashire Steam Boiler, 6 ft. diameter, 26 ft. long; High Pressure gine, 15 in. cylinder, 30 in. stroke; 2 double acting Beam Pumping in. buckets; Hot Steam Engine, 6 in. cylinder, 12 in. stroke; 9 Boiling 9 in. diameter, 11 ft. deep, with pumps, shafting, and piping; Tanks; eap Block Moulds; large quantity of Wood Moulds; 7 Hand Tablet Steam ditto.; Pressing Dies; Drying Rooms; Store Cupboards; 3 Bar achines; Tablet Cutting Machine; Weighing Machines; Contents of ; 3 Horses and Carts; 2 Railway Wagons; Railway, Office Furniture, er particulars, with Schedule and Plan, may be obtained from the J. Milton Broad, Esq., 1, Walbrook, London, E.C.; or from EY, KIRK, PRICE, & GOULTY, 52, QUEEN VICTORIA STREET, , E.C., and Albert Square, Manchester.

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THE DECLINE OF COMMERCIAL CASES IN THE LAW COURTS.

THE discussion of the various opinions which have been ventilated in order to explain why there has been such a marked decline in the number of commercial suitors in the courts of law has been waging pretty fiercely during the last few weeks.

Of the numerous explanations mooted there are many which are feasible, but the majority endeavour to account for the occurrence of something deemed wholly unprecedented.

At any rate, whatever the cause may be, the fact is evidently one of sufficient importance to merit special attention, for on Monday last the Law Courts were closed, and the Judges sat in solemn conclave, a meeting having been convened by the Lord Chancellor to discuss, amongst other matters, the subject in question.

In regard to the surprise which some affect, taught by the experience of several years, we fail to see anything very surprising in the paucity of commercial cases which have found their way into the law courts.

The mannufacturer and the merchant have both plunged pretty freely into the intricacies of the law during the past decade, in order to gain either a settlement of rights, or damages for alleged shortcomings in raw or manufactured products. But, having done so, somehow they do not seem to think they have benefited themselves very much, the satisfaction they have gained being of a very unsubstantial character.

The fault does not always lie in any miscarriage of justice, but rather in petty annoyances, and the irritating attendant fact that the suitor is ultimately considerably out of pocket, even though victorious.

By way of illustration, let us take an instance, which, in regard to the last-named point, is not chimerical, while it will at the same time serve to illustrate the *minutiæ* to which we refer.

In order to obtain compensation for damages to the extent of a thousand odd pounds, a man goes to the trouble and expense of taking his case into the law court. Having done so, he finds his case involves the discussion of technicalities, which are undecipherable to the judge and jury, so he is told he must have recourse to arbitration, and the case is subsequently referred. How much better it would have been to have selected competent arbitrators at the outset, and to have left to them entirely the settlement of the disputed points.

In those cases which are not referred to arbitration, the attendant evils are still greater. First, the litigant has to educate his counsel in the details of the case; details which are very important factors of success. Next, he not unfrequently has to undergo cross-examination at the hands of one who has but feebly grasped the precise bearing of the case, and he is consequently subjected to a great deal of

specious recrimination. Finally, however, he obtains a verdict,—perhaps a favourable one—and then as a consolation for all the discomfitures endured, learns that in order to gain his rights he is out of pocket by perhaps twice the amount he sought to recover.

Is it strange, therefore, that others should be dubious whether the game is worth the candle? And, moreover, on further consideration it seems still less strange that the concensus of opinion should be that it is *not* worth the candle.

The meeting on last Monday was private, but according to the current report nothing of a decisive nature was arrived at. And why should there be? No one, surely, wishes to go to law if he can avoid doing so, and if differences can be amicably settled without litigation, what cause is there to regret the fact? That the litigants have no cause to bemoan the dimunition of the number of cases, the source from whence this inquiry springs only too clearly indicates. Would it not be best, therefore, to let well alone, and encourage rather than disparage this lack of cases, which some would deplore.

THE SOCIETY OF CHEMICAL INDUSTRY.

NEWCASTLE SECTION.

THE first meeting of the session 1891-92 was held at the Durham College of Science, on Thursday evening, January 14th, Mr. John Pattinson, chairman of the section, presiding.

In opening the meeting, the Chairman, in a brief speech, feelingly referred to the sad news of the death of H.R.H. the Duke of Clarence, which had taken place that morning.

The minutes of the last meeting, held on April 9th, having been read and confirmed, a paper was read by Professor P. Phillips Bedson, D.Sc., on "The gaseous constituents of the fumes from the explosives, roburite, tonite, and gunpowder, when used in coal." The experiments described were made in accordance with a decision of the Explosives' Committee of the Durham Coal Owners' and Miners' Associations, with a view of determining whether the fumes produced by the use of the above-named explosives are injurious to health.

Care was taken that the samples were collected under working conditions. Doctor Bedson acted as one of the professional advisers to the committee, conducted the chemical experiments, and made the chemical report, in which the results obtained were embodied.

At the College of Science, on the 14th, Doctor Bedson showed the apparatus used for the collection of the samples, and for the subsequent examination of the gases; he also described the methods of analysis used.

The experiments with the use of roburite were made at Elemore and South Hetton collieries, those with tonite at South Hetton, and with gunpowder at Haswell, all in the county of Durham.

The arrangements and observations were considered under three headings :—1st, observations, etc., made at the intake; 2nd, observations, etc., made at the return; 3rd, observations, etc., made at "the face," after the firing of shots. Having selected a district for the shot-firing, an assistant was placed in a suitable position for collecting an average sample, over about one hour, of the air travelling in past the point. This was got by means of a 10-litre zinc aspirator, filled with water, the taps being opened at a stated time. The assistant at this point also observed the temperature and volume of the air-current, and its barometric and hygrometric state.

The second assistant was stationed at a place where the air could be intercepted immediately after its passage through the district where the shots had been fired; he was provided with similar apparatus for collection of the gases, as in the intake, and these samples were taken at such a time as to represent the vitiation resulting from the shot-firing operations.

Doctor Bedson himself collected samples of the fumes hanging about the face of the coal immediately after the firing of the shots, by means of gas-tight brass cylinders 24 in. long × 6 in. diameter.

These cylinder were fitted with tubes, and having been previously exhausted by an air pump, were held ready in the vicinity of the shot-firing, so that immediately after the report, by running to the place and opening a clamp, a sample of the air was obtained.

Both in the intake and the return three different collections were made; one for the estimation of carbonic acid in the air; the second for the estimation of oxygen; and the third was tried for other than the ordinary constituents of air.

It was expected that carbon monoxide might be a product of explosion. The collections were therefore not only examined for but Dr. Bedson suspended in the return air a box containing a m with a view to examine its blood, after drowning the animal, an arrival at bank) bleeding and examining the solution of blood by of a spectroscope.

After the first series of shot-firing experiments with roburi Elemore Colliery, the examination of the several samples fai show the existence of any deleterious gas, though carbon mon nitric oxide, and hydrochloric acid were specially tested for. Fu the blood of the mouse gave no indication of the presence of monoxide. After many trials of other methods for detecting monoxide, the method used on the second visit to Elemore, a subsequent trials, consisted in drawing the air slowly through a of tubes containing a solution of palladium chloride, which is posed by carbon monoxide, with precipitation of metallic pall and oxidation of the gas, into carbon dioxide.

The precipitated palladium can be weighed and the CO_2 esti by passing into a solution of barium hydrate of known alkalinity.

The roburite used in these experiments was a mixture of dinitrobenzene and ammonium nitrate. When exploded, the fol chemical reaction probably takes place :—

$$C_6H_3Cl(NO_2)_2 + 9NH_4NO_3 = 6CO_2 + 20N + 19H_2O + HC$$

Chlorodinitro-benzene. | Ammonium nitrate. | Carbon dioxide. | Nitro-gen. | Water. | Hydr ric a

Tonite, consisting of equal parts of gun-cotton and barium intimately mixed and compressed into cartridges, was experi with on two occasions at South Hetton.

Tonite, on explosion, probably undergoes the following chang

$$2Ba\,2NO_3 + C_{12}H_{14}(NO_2)_6\,O_{10} = 2BaCO_3 + 10CO_2 + 7H_2O + 5N_2 + O.$$

The blood of the mouse exposed to the return air gave, on s scopic examination, an indication of the presence of CO; but t practically the only indication obtained on that day of the pres any injurious gas in the fumes from tonite.

On the second occasion, the results obtained by the pal method showed absence of CO in the intake air, and its pres traces in the return, the amounts varying from 1·9 to 4·8 volu 10,000 volumes of air.

With gunpowder, at Haswell, traces of carbon monoxid found in the return air. The results of the air analyses, co chiefly of figures, were very wisely taken as read; these the will find in the official report, in the Journal Soc. Chem. Ind., course. On examining the finely divided solid matter, collec glass-wool tubes, no noteworthy result was obtained, and, in t of roburite, there was no evidence of the existence among th matter of nitrobenzene, though, in some cases. Doctor observed the odour of the compound after the firing of roburite. general conclusion arrived at was to the effect that the product explosion of roburite and tonite are not more deleterious than t the explosion of gunpowder. In the discussion which fo Messrs. T. W. Stuart and the chairman elicited some further i tion.

A hearty vote of thanks was accorded to Dr. Bedson for his i ing lecture. After the meeting the members were provide excellent coffee, etc., at the School of Cookery, near the College

LIVERPOOL SECTION.

The usual monthly meeting of this society was held on Wednes week, in the University College; Mr. A. Norman Tate in the cha A. E. Fletcher read a paper on "Modern legislation in restr the emission of noxious gases from manufacturing operations." an interesting review of the origin and development of the leg of to-day, in which the benefits that had accrued to manufactur to the public at large from legislative measures were dwelt upo Fletcher referred to the lines on which future legislation sho planned. He pointed out the anomalies that arose from the A present form, as, for instance, in the case of nitric acid, wh manufacturer was subject to inspection, while his next door nei to whom the acid is sold, might drive it into the atmosphere let or hindrance, not being amenable to the Alkali Act. The of the paper stated that such anomalies had their origin in the d or impossibility of scheduling all the operations which shoul under the control of a Noxious Gases Act. It was pointed this difficulty would be best overcome by scheduling the noxiou themselves, rather than the processes of manufacture which g them, whilst some might think it unnecessary to specify any all, resting content with the idea that any proposed Act for the of noxious gases should apply to any gases which are a known complaint.—The discussion which followed, and in which th man, Mr. E. Carey, Dr. Campbell Brown, Dr. Hurter, a Dagger took part, turned essentially on the methods for sch

any future legislative measures, reference also being made to the welcome aid manufacturers had always received at the hands of the inspectors and to the considerate tact they so characteristically displayed in the carrying out of their duties. A cordial vote of thanks was passed to Mr. Fletcher.

THE CHEMICAL INDUSTRY OF BERLIN.

FROM THE ANNUAL REPORT OF THE BERLIN CHAMBER OF COMMERCE.

IN the year 1890, taken as a whole, the chemical industry of Berlin was in a very satisfactory condition, in spite of constantly increasing cost of production, due to increased prices of coal, raw materials, and labour, and to the burdens imposed by State legislative measures adopted for the good of the working classes. For these reasons, and on account of increasing competition, prices of manufactures did not improve. Although the export trade was rendered difficult by increased duty rates in Russia and America, yet the production of chemical manufactures did not decrease in quantity, but, on the contrary, in some articles increased very considerably. On account of the confidence which prevails in trade and commerce, and of the peaceful political outlook, it is hoped that this comparatively satisfactory state of affairs will continue.

Taking individual articles into consideration, it is reported that in 1890, as in 1889, sales of sulphate of ammonia were light. There was no temporary scarcity of wares as was the case in the fall of 1889. The demands of consumers could all be met, and no important stocks were carried over into the new year. The average price for the Berlin manufacture, which, as heretofore, was preferred to others, was 26 marks per 100 kilograms.

For carbonate of ammonia prices remained as in the preceding year, for quantities 65 marks, and for single casks 67 to 68 marks, being quoted per 100 kilograms.

White crystallised sal ammoniac brought 58 to 60 marks for best technically clean wares. Lower grades, of which much was on the market, were sold cheaper. Aqua ammonia (spirits of sal ammoniac) 0·91 remained unchanged at 33 marks per 100 kilograms.

Potash was at first, as is almost always the case, placed on the market at very low prices. No satisfactory reason can be given for this, as near the end of the year—as had also been the case in the last months of 1889—wares became very scarce, and buyers were obliged to accommodate themselves to prices even above 40 marks per 100 kilograms. The cheap prices appear to have been due to the fear of certain manufacturers that they would not be able to entirely dispose of their production. This fear was, however, as experience has shown, unfounded. Quotations were, as in the preceding year, 36 to 37 marks per 100 kilograms. for 96 to 98% wares.

Concerning the continued development of the Staasfurt potassium (kali) industry, which exercises a controlling influence on the manufacture of potash and other articles in Berlin, the following figures give a clear idea. In the year 1890 the State and private potassium works produced the following quantity of raw salts for manufacturing purposes :—

	Meter Centners.*
Carnallite	8,105,298·66
Kainite	639,617·43
Sylvanite	207,315·25
Schonite	434,115·00
Other	3,337·00

From the above were manufactured :—

	Meter Centners.
Chloride of potassium (80 per cent.)	1,406,847
Bisulphate of potassium (90 per cent.)	121,660
Crude potassium-magnesium sulphate (48 per cent.)	96,467
Calcine manure salts	23,995
Kieserite	346,494

There were also sold for agricultural purposes 2,934,145·95 meter centners of kainite and sylvanite, and 250,970·58 meter centners of carnallite and kieserite, and for baths and industrial purposes about 26,300 meter centners of carnallite and kieserite. The prices for these salts remained practically the same as in the year 1889.

The trade in oxalic acid was very active, but prices fell far behind those obtained in 1889. The cause of this was a certain haste to sell at cheap prices at the beginning of the year out of fear of English competition. The average price was about 55 marks per 100 kilograms.

Chlorate of potassium could not entirely recover itself this year. Often prices seemed to have a rising tendency, but the improvement could not be maintained. In this article there was a decided overproduction. Quotations fluctuated between 90 and 100 marks per 100 kilograms.

In prussiate of potash and borax business was regular, and the prices of the preceding year were maintained.

In soluble glass (*Wasser-glas*) sales somewhat increased, but in spite of increased demand and higher prices for the alkalis needed in its production, prices remained unchanged, and no improvement could be reached on account of continued over-production.

The prices of calcine and caustic soda rose steadily until the middle of the year ; in crystallised soda this could not continue, owing to overproduction. In comparison with ammonia soda quotations, the prices for crystallised soda should have been considerably higher than in 1889. A convention of crystallised soda manufacturers was called for the purpose of considering how the condition of affairs could be improved, but nothing was done, owing to the smaller manufacturers demanding advantages which the larger manufacturers were unwilling to grant them.

Sulphuric acid was in demand throughout the year, but there was no scarcity of wares. The price for 66° wares was seven marks per 100 kilograms.

Prices of Chili saltpetre rose near the end of 1890, principally on account of the unsteady state of affairs in South America, and a further rise is expected. The quotation for 36° nitric acid was 23 marks per 100 kilograms.

The condition of the tar industry was uninterruptedly satisfactory and all products thereof, with a single exception, found ready sales. Of the raw stuffs for dyeing industries benzol and naphthaline were in specially strong demand. The former rose in the course of the year about 25 per cent. in price, and the value of naphthaline increased so much that its manufacture was more lucrative than it had been for many years ; also the demand for toluene, which for years has been very much neglected, improved, and higher prices were obtained. Anthracene found good, steady sales, and, with the exception of some fluctuations at the beginning of the year, prices changed very little. Impregnating oils, and especially pitch and roof lacquer, were in active demand at rising prices.

The exception above mentioned was crystallized carbolic acid. The value of this article in former years was more than doubled or tripled by its extended use for military purposes. As this demand fell off and further orders from other governments, which were expected in England, were not given, prices fell to or below the former level. The quotation at the beginning of the year was 11½d. for raw wares. At the end of December it had fallen to 5¾d. Since large purchases for the purposes mentioned have again been made in the new year, a change for the better appears to have set in.

The increase in business expenses of the tar industry, mentioned in the report for 1889 and continued in 1890, in part became more noticeable. This is due especially to the slow forwarding of loaded private transportation wagons by the railways, whereby the tar industry was much injured.

Sales of tar colours were very active throughout the whole year 1890, but prices were unchanged, if not even lower, in spite of the already reported rise in raw materials. This unpleasant situation for the manufacturers the market condition in former years has already shown ; and, if this industry has any hope of renewed success, it lies in patented specialties. With anxious expectation the tar colour industry and almost all branches of the chemical industry are watching the discussion of the proposed patent law, which is so important for their development. For aniline oil and aniline salt the demand was unusually strong that it could not be entirely met by the manufacturers. In consequence prices rose considerably, and the outlook for this branch of fabrication is very reassuring. The unsatisfactory condition of the business in secondary products of the tar-colour industry, such as naphthol, etc., which was alluded to in last year's report, became more unfavourable in spite of the fact that the demand for these articles, as compared with the preceding year, had not only not decreased, but had actually increased. In spite of nearly all raw materials having become dearer, such as naphthaline, caustic soda, etc., an improvement in prices could not be secured on account of increased competition and overproduction.

The domestic demand for chemical mineral colours was very strong. Although competition made itself very distinctly felt, sales were larger and prices advanced 15 per cent. over those of 1889. From the nature of things in Berlin and vicinity, where wages are high and the entire cost of manufacture dear, only first-class wares can be manufactured. The consequence is that provincial factories devote themselves to cheap products (earth colours, etc.), while the Berlin and Charlottenburg factories not only supply the land with fine and dear products, but also press other competitors. This applies not only to sorts used for wall and coloured paper manufacture, but also to painters' colours, and especially to the fine products for book and lithograph printing. Success against competition could only be reached by partial reductions of price, which in some sorts were small, while in others they were

* 1 Meter Centner = 220·5 lbs.

more noticeable. To counteract the effect of reductions in prices, efforts were made to simplify methods of production, and thus to reduce expenses. An unfavourable influence on manufacture by such raw materials whose prices were fixed by agreement was not noticed.

(To be continued.)

THE MANUFACTURE OF IRON FREE SULPHATE OF ALUMINA.

SPECIALLY CONTRIBUTED.

(*Continued from page 36.*)

KYNASTON'S ARSENIC AND FERROCYANIDE PROCESS.

This process was invented in 1879, and introduced to the British Association in 1880 in a paper read by Kynaston himself. He starts with bauxite and oil of vitriol, and whilst the chemical action is going on between those substances, adds sufficient arsenious acid to precipitate the iron as arsenite of peroxide. The batch of crude sulphate of alumina liquor is then rendered basic by the addition of milk of chalk, and is finally run off into large lead-lined tanks, where it remains for three or four days till perfectly cold. The liquor assumes a deep yellowish tint, due to the formation of the arsenite. After the lapse of time a sample of the clear liquor is withdrawn, and a small quantity of milk of lime added. If the yellow tint deepens, more chalk is added to the bulk of the liquor, and this again allowed to stand. It is necessary that the liquor contains tetrabasic sulphate of alumina. Without this, the ferric oxide separates but sparingly. By carefully repeating the addition of chalk at intervals of a few days, and continued settling from 80 to 90% of the original amount of ferric oxide is removed. It is, however, quite impossible to get the whole of the iron to separate from solution owing to the solubility of the arsenite of peroxide, and Kynaston, in order to procure a perfectly pure product, now treated the partially purified liquor in a separate vessel, with a slight excess of ferrocyanide of calcium to throw down the remainder of the iron as Prussian blue. The excess of ferrocyanide he then removes by adding a small quantity of sulphate of zinc or copper, which had also the peculiar effect of throwing down every particle of blue colouring matter held in solution or suspension in the liquor. Without such treatment it was deemed impossible to get rid of the Prussian blue. The liquors, although free from iron and ferrocyanide, still contained the excess of arsenic and zinc or copper, and to remove these it was then subjected to the action of a sulphide, preferably sulphide of calcium, made by igniting pure sulphate of lime and oil cake in nearly equivalent proportions in a closed retort. The solution after filtration or settling yielded on evaporation a final product which is undoubtedly one of the purest sulphates of alumina known. It contains no trace of iron by the sulphocyanide test, and otherwise is almost pure sulphate of alumina. Provision was made to recover the ferrocyanide in the form of the calcium salt, by heating the Prussian blue precipitate after it was washed by subsidence with lime, and settling out the ferric oxide.

Owing to the four distinct chemical operations of purification, it is obvious enough that this process is an elaborate and tedious one, requiring a large quantity of plant, but notwithstanding this, it was for many years most successfully worked under the skilled and patient supervision of the originator. It is in active operation to-day, although it has to bear the competition of cheaper and less complex processes.

BINOXIDE METHODS.

Under this general title are included a series of processes of comparatively recent origin. In all of them a binoxide in combination with a base, or with water, is used as the precipitating agent. The exact chemical constitution of these reagents is not known, and, so far as we are aware, have been little studied. They are powerful enough to perform the work efficiently and well. In 1881 Drs. Semper and Phalberg obtained a patent for the removal of iron from alum liquors by using a peculiar combination of binoxide of lead with water; and, rapidly succeeding him, Kynaston again entered the field with a patent for the use of hydrated peroxide of manganese. Still later, Messrs. Hood and Salamon followed with the application of hydrated binoxide of tin. It was well known to chemists previous to 1881 that, under certain conditions, the peroxides of lead, manganese, and tin, had the property of combining with ferric oxide, but no industrial application of this property was made till Semper and Phalberg introduced their process for purifying sulphate of alumina liquors in that year by means of hydrated peroxide of lead. The compounds which these peroxides severally form with ferric oxide have been imperfectly studied, and consequently their constitution is not known. Experience on the industrial scale has, however, shown that they bear a remarkable relation to one another, for the quantities of each required to remove say one unit of iron are nearly proportional to their atomic weights. But this is only so when great care is observed in their manufacture. Each of the *patentees specify very* distinctly how their individual binoxides, or combinations thereof, are prepared, and lay considerable stress on the method of preparation as well as on the mode of using them. The conditions as regards neutrality or basicity, etc., of the aluminous liquors are substantially the same in all three processes. All require the iron to be in the ferric state, and the liquor to be basic to the extent at least of the SO_3 in combination with this ferric oxide. We will, therefore, recapitulate the methods of preparing the hydrated binoxides, and then treat generally of the purifying operation.

PREPARATION OF PLUMBIC DIOXIDE HYDRATED BINOXIDE OF LEAD.

Messrs. Phalberg and Semper (Eng. Pat. 5,579, Dec. 20th, 1881) recommend the following method of preparing this reagent, on the large scale, by first grinding litharge (PbO) and strong brine (NaCl) together in a mortar mill. Basic lead chloride is formed. The thin pasty mass is then treated in the cold with solution of bleaching powder (calcium hypochlorite), whereby hydrated binoxide of lead is immediately formed. This is washed by decantation with water. It is used in the pasty condition, and should be neither heated nor dried. It should be of a dark brown colour, and on no account be black; the black modification being too dense and less hydrated than the other, and less suitable for the purpose in view. As an alternative method, they treat red lead Pb_3O_4 with cold strong nitric acid, which removes two equivalents of PbO, leaving a highly hydrated peroxide of lead.

PREPARATION OF HYDRATED BINOXIDE OF MANGANESE.

Kynaston (Eng. Pat. No. 3,809, 1882) obtains this from Weldon's mud, which is substantially a mixture of manganites, *i.e.*, peroxide of manganese in combination with manganous oxide, lime, and water. In the preparation of the hydrated peroxide from this mud, it is first treated with a dilute acid to remove the "bases" MnO and CaO, and then thoroughly washed till free from soluble salts. It is not heated, for in doing so it would become partly dehydrated, and thereby rendered inactive. The reagent thus prepared has been called by Mr. Kynaston "manganite of hydrogen." It is very active in combining with the ferric iron, and consequently performs the work of removing this substance from the aluminous liquors thoroughly and quickly. If the acid treatment of the Weldon mud to remove the whole of the MnO in combination with the MnO_2 has not been efficiently carried out, or if the iron in the aluminous liquor has not been wholly oxidised to the ferric state, it is obvious that manganese will pass into solution, owing, first, to the solubility of MnO in weak acid solutions, and, secondly, to the reduction of the MnO_2 by ferrous salt. Although a small quantity of manganese invariably passes into solution in actual work on the large scale, yet to insure that this will not be too large, the mud, after treatment with acid and subsequent washing, is usually treated with a small quantity of bleaching powder solution, till, in fact, the rose colour of a permanganate is formed, and then finally washed before it is added to the crude aluminous liquor.

PREPARATION OF META-STANNIC ACID (HYDRATED PEROXIDE OF TIN).

Messrs. Hood and Salamon obtained a patent (No. 12,110—1886) for the preparation of this re-agent. They start by heating metallic tin and sulphuric acid together, and then they oxidise the resulting mass, which contains more or less stannous salt, with nitrate of soda. The mixture is now largely diluted with water in order to precipitate the meta-stannic acid. The precipitate, which is light and flocculent, is washed by decantation with successive additions of fresh water till nearly free from acid, and finally made slightly alkaline with soda or other alkali. It may even be rendered strongly alkaline in order to form a meta-stannate. The meta-stannic acid or meta-stannate is now ready for use. Instead of a nitrate, ferric sulphate, or manganese dioxide (Weldon's manganese mud) may be employed for oxidising the stannous salt. The whole of these operations are conducted as much as possible in the cold, so that the activity of the meta-stannate may be maintained. Stannates or stannic acid are not nearly so active as the corresponding meta-salts.

The industrial use of these binoxides or salts is very simple. After the crude aluminous liquor has been oxidised, neutralised with chalk, and the sedimentary matter settled out, a certain quantity of either of the binoxides is added, the liquors meanwhile being kept in a continual state of motion. In a short time a sample of the mixture is withdrawn, filtered, and the filtrate tested for iron. If a trace only remains enough binoxide has been added, and after the liquors have been allowed to settle, as a general rule they will be found to be free from iron. In this way the purification is conducted in one operation. Another and more economical method, as regards the quantity of reagent used, especially when this is expensive, is first to treat the crude aluminous liquor with such a quantity of the binoxide so as not to precipitate the whole of the iron. After the precipitate has been allowed to settle, the clear liquor is run off into another vessel, and then treated with an excess of the freshly-prepared binoxide. When this has subsided the iron free alum liquor is run off, whilst the precipitate, partially saturated with iron, is used again to purify a fresh quantity of the crude liquor.

There is considerable expense attending the preparation of these binoxides, and, consequently, considerable judgment must be observed in the way they are used. When they are practically saturated with ferric oxide, they undergo a treatment to free them from this body, thus revivifying them for re-use again. In carrying this out they are washed with water to get rid of soluble aluminous salts, and then are agitated for a considerable time in cold dilute sulphuric acid. The ferric oxide passes into solution, and is separated from the hydrated binoxide by washing with pure cold water. The precipitate is then ready for use again. In no case, however, is the recovered binoxide so active as that originally prepared as described by each of the inventors. They all become more or less inactive after repeated use, and finally become quite useless. This is doubtless due to a gradual change in their chemical constitution, and mainly, we believe, to dehydration. It is a significant fact that if any of these freshly-prepared hydrated bodies be boiled for a length of time, they are rendered much less active and, indeed, substantially worthless as precipitating agents.

Dealing with metallic oxides more or less pure and such acid solutions, it is to be expected that a portion of the metal corresponding to these oxides will finds its way into the aluminous liquor. This so frequently takes place in actual practice that provision is made in all these processes to remove any manganese, lead, or tin which is rendered soluble. The presence of lead or tin in the final product may be neglected in many cases, for only traces at the most of these metals pass into solution, and such traces will do little harm in many of the uses to which sulphate of alumina is put. Their presence does not discolour the dry sulphate of alumina ; but in the case of manganese it is somewhat different. A slight trace of this metal will not only discolour the final product but render it unsuitable for many purposes. Hence the alum liquor after its purification from iron by either of these binoxides is further purified to free it from manganese, lead or tin. Lead and tin may be removed as sulphides by adding sulphide of calcium to the liquor, or by passing a stream of sulphuretted hydrogen through it. The use of sulphides or H_2S also separates any arsenic in the liquor, derived from the vitriol used for dissolving the bauxite. Kynaston recommends the use of a hypochlorite for precipitating the manganese held in solution as MnO_2 ; but the best way is that recommended by Semper (Eng. Pat. 4400—1882), which consists in adding a permanganate. This throws down all the manganese as MnO_2.

(*To be concluded.*)

PROCESS FOR THE MANUFACTURE OF METALLIC NICKEL.

MONS. J. GARNIER, Paris, France, has recently patented a new process for the manufacture of metallic nickel. It consists in purifying the crude nickel resulting from the reducing fusion of nickel oxide or roasted nickel mattes by charging the crude nickel with the addition of coke and lime, magnesia or baryta, together with flourspar or sea salt in a water-jacketed furnace having a basic lining or a lining of chrome-iron ore, the bed of fusion being so prepared that the bases enter into the slag formed in the proportion of 5 per cent. to 25 per cent. of silica and fluorspar or silica and sea salt, the product obtained consisting only of nickel and the metals of the bed of fusion, viz., iron, and sometimes copper, from which the sulphur, arsenic, silicon, and phosphorus have been eliminated. The product thus formed may be energetically oxidized and deoxidizing agents added to get rid of the iron so as to obtain pure nickel or nickel alloyed with copper, or it may be employed in the manufacture of alloys of nickel and iron.

AMMONIA IN BAKING POWDER.

THE various baking powders of commerce are employed to produce an artificial evolution of carbon dioxide, to support that produced in the dough by the action of the yeast. The composition of baking powders varies considerably. It appears to be most convenient to produce the carbonic acid by the action of hydrochloric acid on sodium bicarbonate, since in this way salt, which is in any case necessary, is also formed. Another widely-used material is ammonium carbonate. It has been hitherto assumed that this substance after aiding in making the dough rise was volatilized by the heat of the oven. Dr. Endemann has, however, found that the ammonia is by no means all removed, but remains more or less completely united with the gluten. This result was communicated to the association of chemists assembled at Washington in August, 1891, and, although the presence of ammonia is not a source of danger for the consumer, nearly all the chemists present agreed in discouraging the use of ammonium carbonate as a baking powder.

Official Memoranda.

(From the Board of Trade Journal.)

NEW CUSTOMS TARIFF OF MEXICO.

Note.—Kilo. = 2·204 lbs. avoirdupois. Sq. metre = 1·196 sq. yds. Peso = 4s. 2d.

The following is a statement of the rates of import duty now levied upon certain articles under the new Customs tariff of Mexico, which came into operation on the 1st November last.

Note.—By "net weight" must be understood the actual weight of the merchandise ; by "legal weight" that which includes besides the "net weight" that of the interior bottles, boxes, winders, wrappers, etc., in which the articles are imported ; and by "gross weight," the total weight of the packages. When merchandise, which pays according to the "legal weight," has no other covering besides the one which forms the outside package, the actual weight of the merchandise will be considered to be its legal weight.

No. in Tariff.	Articles, etc.	Rates of Duty now levied.		
				Pesos. Cs.
63	Animal charcoal	Free.		
128	Hemp, flax, ramie, jute, and other vegetable fibres not metres of length	Kilo.	(legal)	0·50
168	Olive oil, in jars or flagons, without allowance for waste or leakage	,,	(net)	0·15
169	Olive oil, in glass vessels, without allowance for waste or leakage	,,	,,	0·20
182	Cotton seed of all kinds	,,	,,	0·10
187	Spirits of turpentine	,,	(legal)	0·10
188	Norway or Beech pitch	,,	,,	0·10
191	Indigo	,,	,,	1·50
192	Vegetable charcoal	Free.		
194	Dextrine	Kilo.	(legal)	0·10
195	Gum arabic, copal, damar, pounce or sandarach, lac, senegal, and tragacanth	,,	,,	0·10
196	Orchilla	,,	(gross)	0·05
197	Glue	,,	,,	0·04
198	Wood, pulped, also in sheets for manufacturing paper	Free.		
199	Tannin	Kilo.	(legal)	0·10
344	Aluminium	,,	,,	0·25
345	Metallic antimony or regulus	,,	,,	0·25
346	Metallic arsenic	,,	,,	0·25
347	Quicksilver	Free.		
348	Cadmium	Kilo.	(legal)	0·25
349	Calcium	,,	,,	1·00
350	Magnesium	,,	,,	0·25
351	Nickel	,,	,,	0·25
352	Potassium	,,	,,	1·00
353	Sodium	,,	,,	1·00
354	All other metals not specified	,,	,,	1·00
355	Asbestos, in fibre or dust	Free.		
358	Sulphur	Kilo.	(gross)	0·01
359	Roman or Portland cement, lime, etc.	Free.		
360	Carbonates of barytes, magnesia, or strontium	Kilo.	(legal)	0·08
361	Carbonate of lime	Free.		
368	Ochre	Kilo.	(legal)	0·08
369	Flint	,,	(gross)	0·05
370	Peroxide of manganese	,,	(legal)	0·03
371	Mineral stone of all kinds	Free.		
374	Plumbago	Kilo.	(legal)	0·08
375	Talc	,,	,,	0·03
376	Fire-clay	Free.		
377	Gypsum and stucco	Kilo.	(gross)	0·10
378	Mineral oil, impure	,,	(net)	0·02
379	Mineral oil, purified	,,	(legal)	0·10
380	Coal tar	,,	(gross)	0·04
381	Asphalte	,,	,,	0·04
382	Mineral wax	,,	,,	0·10
383	Coke	Free.		
384	Paraffin and candle wax	Kilo.	(gross)	0·10
385	Mineral paste for polishing	,,	(legal)	0·10
386	Vaseline	,,	,,	0·15

CRYOLITE PRODUCTION IN AMERICA.

The following paragraph appears in the *Manufacturer's Record* of Baltimore :—

Cryolite is a mineral that has been extensively mined in Greenland for a number of years. Dana's geology describes it as "a fluoride of aluminium and sodium, found in Greenland, of a pale, greyish-white

snow-white, or yellowish-brown. It occurs in masses of a foliated structure. It has a glistening vitreous lustre." It is extensively used in a variety of industries, including the manufacture of alum, soda, soap, and glass, and in tanning. A Murfreesboro (Tenn.) letter to the *Nashville Banner* says that a large vein of cryolite has been found six miles north-east of the former city, in the Lascassas lead mines, which were discovered some two years since. An expert in the employ of St. Louis capitalists has been for some time employed in prospecting this vein, and, on the strength of his report, the latter have made a proposition to the owners of the property that, if accepted, will result in extensive mining operations. It is reported that in several shafts that have been sunk cryolite has been found in a pure state, or associated with a small proportions of zinc, silver, and galena. The commercial value of cryolite is about two cents a pound, consequently, if this deposit should prove to be as reported, a vein 40 feet wide and containing 80 per cent. of pure cryolite, it will be one of the profitable mines of the South.

RIVER POLLUTION IN SPAIN.

TENDERS FOR SEWAGE WORKS.

THE municipality of Bilbao are about to invite engineers to submit preliminary plans for a system of sewers to prevent the pollution of the River Nervion. The best four plans will receive premiums varying between 10,000 and 1,000 pesetas. Five months are allowed for the preparation of the plans. Copies of the conditions can be obtained of the secretary of the Ayuntamiento of Bilbao, and a copy can be seen at the Commercial Department of the Foreign Office, London, between the hours of 11 and 5.

BELGIAN COAL AND IRON INDUSTRIES.

M. Harzé, Engineer in Chief, Director of Mines, has just published his annual report on the situation of the Belgian coal-mining and metallurgical industries in 1890. This report, always very interesting, is especially so this year. Comparisons are given not only for the year 1890 with preceding years, but for each of the decennial periods since the year 1830, as also general considerations on the relations of capital with labour, on strikes and on other important points. We take a few of the more important data given in this report from a summary published in the *Moniteur des Intérêts Matérials*:—

The Belgian production of coal in 1890 was 20,365,960 tons, of a value of £10,740,000. This is the largest quantity which in one year has ever been extracted in the kingdom, and the value of the quantity mined has never been so large, except in 1873, when 15,778,401 tons, valued at £13,505,000. were obtained.

The sale price has been gradually rising since 1887, and has reached 13·18 francs, an increase of 3·73 francs over the preceding year.

For 50 years the number of the places where coal is found has been gradually decreasing by reason of the concentration of the works. In 1841, that is 50 years ago, the number of places increased to 468 for a population of 37,629 coal workers and a production which was not one-fifth of that of the present day. This number of places has been reduced at the end of the four decennial periods which have followed, that is to say in 1850, 1860, 1870, and 1880, respectively to 408, 335, 315, and 304, finally dropping in 1890 to 275.

On reference to the table of the classification of workmen, it is seen that since 1883 the proportional number for the whole of the women and girls has diminished by 50 per cent., the absolute number of this total having decreased by 44 per cent.

The production per pit-worker has considerably diminished by comparison with 1889, and has fallen from 242 to 229 tons Taking the whole of the workers, this yield has fallen from 184 to 174 tons. As regards the duration of the hours of labour, a much-discussed question within recent times, it is on the average as follows in the different districts and for the different works:—

Couchant de Mons: dressing works, 9½ hours; pit works, 11 hours; Centre, 9 to 10 hours; Charleroi, 10 hours; Namur, 10 hours; Liège, 9 to 10 hours.

The following statement shows the progress of the average annual wages paid since 1886 in the different basins:—

—	1886.		1887.		1888.		1889.		1890.	
	£	s.	£	s.	£	s.	£	s.	£	s.
Couchant de Mons....	28	10	29	1	31	16	34	18	42	11
Centre.....	32	12	34	2	36	12	39	14	46	4
Charleroi.....	30	10	31	14	33	13	35	10	44	8
Namur.....	27	8	29	4	31	8	33	18	42	4
Liège	34	14	36	8	37	18	39	15	46	3
Total for the Kingdom	31	6	32	12	34	15	37	5	44	13

The average daily wage is 3·81 francs, made up as follows:—Pit-bank worker, 2·57 frs.; pit-worker, 4·20 frs. Not taking into account the women, boys, and girls belonging to the working staff of the pit, the wage of the coal-gainer amounts to 4·59 frs. daily.

The net profits per ton have been 2·88 frs.; 12 collieries only have lost to the extent of 1,613,000 frs., against 122 collieries having an excess in receipts of 60,373,000 frs. The net result is a profit of £2,350,400. Since 1881 the profits of the collieries have been on the increase. In fact, in 1881 the total for the year gives a loss of 0·09 fr. to the ton, against a net profit of 2·88 frs. in 1891. During this time, the part of the workman per ton passes from 5·59 frs. to 6 40 frs.; that is to say, that it varies in relatively very feeble proportions.

The production of coke in 1890 was 2,176,755 tons for 4,535 furnaces in activity, employing 2,722 workmen.

There were working, in 1890, 36 blast furnaces, employing 2,784 workmen, with an average wage of 2 82 frs., and having produced 787,836 tons of iron, worth £2,002,920. In 1889 the production of the iron was 832,226 tons, or a decrease for 1890 of 44,390 tons; the value per ton has, on the contrary, very largely increased. It may be remarked that the consumption of native ore is only 9% of the total.

The number of establishments working iron in 1890 was 62, with 488 puddling furnaces employing 17,142 workmen, having an average wage of 3·32 frs.

The following is a statement of the production of finished iron during the four last decennial periods:—

1851-60, 1,431,443 tons; 1861-70, 3,587,642 tons; 1871-80, 4,667,485 tons; 1881-90, 5,054,070 tons.

THE PRODUCTION OF ALUMINIUM.

Taking into account the development made by the factories of aluminium in recent years, it may well be believed that the production almost equals the demand, although new uses for this light but ductile metal are being daily discovered.

The *Bulletin de Musée Commercial*, in a recent number, reviews the productive capacity of the principal aluminium factories now in operation. Since the closing of a large number of European works, by reason of the difficulty they experienced in competing with the electrolytic process, the manufacture of aluminium is at present confined to four large factories. The most important is the *Aluminium Industrie Actien-Gesellschaft* at Neuhausen on the Rhine, the daily production of which is about 1,000 lbs, of metal. Then comes the Pittsburg Reduction Company, with a daily production of 600 lbs.; the Metal Reduction Syndicate, Limited (English branch of the Pittsburg manufacture), with 300 lbs. daily; and finally, the Cowles Company, which has a daily production of from 600 lbs to 700 lbs., but of which the greater part consists of alloys of aluminium. It is thus seen that the present production of aluminium in the world only amounts to about 2,600 lbs. daily.

Hitherto the largest quantity of commercially pure aluminium seen at one time consisted of a stock of about 19 tons to be found recently in the warehouses of the Pittsburg Reduction Company. Then may be mentioned, in order of importance, the Paris Aluminium Company, which ceased its operations at the commencement of 1890 with a stock of 10 tons; the Alliance Aluminium Company, of Newcastle, and the Aluminium Company, Limited, of Birmingham, which possessed, at the time of the closing of their works, stocks of eight and six tons respectively.

Towards the middle of last year American aluminium was quoted at the rate of 2 dols. per lb.; some few months later the price was reduced to 1 dol. per lb. The present prices of the Pittsburgh Reduction Company are: For No. 1 quality, 90 cents per lb. in small quantities and 75 cents per lb. for orders of at least one ton; for No. 2 quality, of a purity of from 94 to 97 per cent., 65 cents per lb. for quantities of not less than a ton.

On the other hand, it is stated that a French company has just erected an establishment at St. Michel (Savoy) for the manufacture of aluminium by the Minet process; this process is based on the electrolytic treatment.

THE ADVANCE OF CHEMICAL SCIENCE IN 1891.

VAST additions have been made to the science of chemistry during the year; new combinations of elements have been discovered, new properties of existing elements, new relations between physical and chemical action, and especially between the latter and those other forms of the all-pervading force which we call electricity One of the latest announcements in this connection was that made at the Royal Society in the beginning of December, that Professor Dewar, of the Royal Institution, had "placed a quantity of liquid oxygen in the state of rapid ebullition in air (and therefore at a temperature of —181° Centigrade) between the poles of the historic Faraday magnet in a cup-shaped piece of rock-salt," and to his surprise Professor Dewar saw the liquid oxygen, as soon as the electro-magnet was

ted, "suddenly leap up to the poles and remain there per-
ly attracted until it evaporated." Dr. Gladstone has been as
usual investigating the molecular refraction and dispersion of
substances. Professor Crookes has been as busy as Dr. Glad-
and his experiments on electrical evaporation have attracted
attention. The burning question of "solutions" has been
ng much attention in the chemical world, giving rise to nearly
h difference of opinion, if not quite so much bitterness, as that
ation in the biological world It is strange to find a name
ely associated with English literature figuring as that of the
of an able address on the subject of solutions at last year's
g of the Australian Association for the Advancement of Science.
or Masson, of Edinburgh, has not deserted his old love, but his
Australia, who has chosen the severer path of chemistry, proves,
glad to say, that in the matter of careful and hard work, he is
son of his father. Professor Judd has been again dealing with
ourite subject of crystals, and, though he approaches it from the
ical standpoint, it really belongs to the domain of chemistry.
or Judd treats these products of nature as if they really lived
ved and had being, just indeed as if they were organic bodies.
ks of the "rejuvenescence" of crystals, and attributes to them
roperties, which hitherto we have associated only with life. His
hes are important as bearing on the very foundation of geological
. Professor Roberts-Austen's discovery of the most brilliant
nown (75 per cent. of gold with 25 per cent. of aluminium) is
ous interest. More important are Mr. T. Andrews's researches
passive state of iron and steel, which take us to the borderland
n physics and chemistry. Two French chemists, MM. Cailletet
llardeau, have been working at the critical point of water
. M. Moissan's researches on the element fluorine, have
l interesting results, owing to the intense chemical activity of
lement. Another French chemist has been carrying on
tative investigations as to the chemical action of light.
search of interest, as showing the intimate relations between
try and biology, has attracted some attention during the year.
been carried out by a young chemist, Mr. Cuthbert Day, who
ntends the scientific work in Younger's brewery in Edinburgh.
s with the sprouting of barley, and Mr. Day has by means of an
ously contrived apparatus endeavoured to ascertain the precise
ce of temperature on the process, with results that ought to be
scientific and practical value. The chief point to be noticed is
hough there is a considerable falling-off in the increase of the
ty of carbon dioxide produced when the temperature rises above
ar., yet the effect in diminishing the increase in the weight of
t is much more marked. To this almost random selection from
emical work of the year must be added as an event of importance
ilee of the Chemical Society on February 24, when, among
, Lord Salisbury gave an address full of suggestive scepticism, if
salmism, in science.

Reports of Companies.

MAC IVOR'S PATENTS, LIMITED.

extraordinary general meeting of the shareholders in Mac Ivor's
Patents (Limited) was held last Monday at the offices, Worcester-
, Walbrook, to confirm a resolution passed by the shareholders at
ting held on the 29th ult., altering the title of the company to
vor's White Lead Company (Limited). Mr. J. Jepson Atkinson,
resided, explained that at the previous meeting the directors had
ted a proposal that, for trade purposes, the name of the company
l be changed to "The Northfleet White Lead Company
ted)." The board had had the question under their serious
leration since that time, and still maintained that it was
lent, in the interests of the company, that the name which they
riginally proposed was the most desirable that could be adopted.
erefore moved as an amendment that that should be the denomi-
of the undertaking. Mr. W. Elmore seconded the amendment.
A. Cruickshank said that there would be no objection on the part
shareholders to the proposed alteration, but he thought that it
only be just to Mr. Mac Ivor, the original discoverer of the
s, that no reflection should be cast on him as to the value and
alidity of the patents with which his name had become indis-
ly identified. Mr. Hayes, solicitor to the company, said that the
t of the directors was simply to enhance the value of the under-
g. So many patents for the production of white lead had been
on the market with disappointing, not to say disastrous, results,
e users of the product were chary of having anything to do with
was described as a patent manufacture. Hence, he thought,
without in the smallest degree reflecting on Mr. Mac Ivor by
rawing his name from the title of the company, they would promote, by the proposed alteration of its title, the value of their enterprise. The chairman further said that he thought he had made this point clear at the previous meeting, and that it was in the interests of the shareholders and for trade purposes only that the title of the company should be altered as proposed. On a show of hands the voting for the amendment was equal, but on a further explanation having been given by the chairman for the change of the title, the amendment was carried unanimously. Mr. H. O. White, the managing director, in reply to Mr. M'Laren, said that the company's plant at Northfleet was in a condition to commence active operations almost immediately, and would be able to produce white lead at a figure considerably below that of the Dutch process, while, as time went on and experience was gained, the cost would be greatly reduced.

Our Book Shelf.

METHODS OF GAS ANALYSIS. By Dr. W. Hempel. Translated from second German edition by L. M. Dennis; 367 pp., with index and tables, 101 illustrations. London: Macmillan and Co., 1892.

This work is very well got up, the woodcuts being very good. It is not a manual of gas analysis by any means, but is rightly designated "Methods of Gas Analysis," being chiefly a description of the researches of the author, as to which of the various methods suggested are the most practical The work is divided into three parts. Part I. treats of the apparatus and general methods employed, charging pipettes, purifying mercury, etc. Chapter four (Part II.) covers a lot of ground, as it treats of the determination of various gases, such as ozone, oxygen, carbon dioxide, hydrogen, oxides of nitrogen, etc. There is one point which calls for special reference in connection with the estimation of oxygen gas by absorption with potassium pyrogallate. It has been stated that in the analysis of illuminating gas, special precautions are requisite in order to obtain accurate results by this method, on account of the tendency of the solution to form carbon monoxide. This point has been carefully investigated by the author in conjunction with Herr Oettel, of Dresden, and Herren Kreusler and Tacke, in Bonn. In three minutes absorption is said to be complete, and the variations found both with the copper and hydrogen eudiometer would indicate that the pyrogallate method was the best for parallel analyses. The amount of carbon monoxide evolved was found to be so small as to be unreadable and hence inappreciable. The reason why inaccurate results are sometimes obtained by the potassium pyrogallate method is stated by the author to be due to employing caustic potash purified with alcohol, the use of which is emphatically prohibited.

Part III contains in detail the methods for analysing such mixtures as furnace gases, illuminating gas, etc. The chapter on the latter will be found very useful for reference in the execution of technical gas analyses, as it includes water gas, generator gas, blast and coke furnace gases, as well as ordinary coal gas.

The scheme of analysis opens with the photometric test, followed by various methods of taking the specific gravity, the gas balance of Friedrich Lux being well spoken of. The estimation of the tar and the other usual determinations are then described in full.

The analysis of gases in connection with the manufacture of sulphuric acid forms the subject matter of Chapter III. The analysis of air and the apparatus and methods for analysing potassum nitrate, and nitric acid esters, along with the analysis of various organic substances, leads up to an interesting chapter on a calorimetric method of estimating the heating power of coal.

The most original portion of this work, however, is Chapter V, Part 3, wherein is described a method and apparatus for determining fluorine as silicon tetrafluoride. The work is well arranged, and constitutes a source of practical information, upon the handiest and most reliable methods for use in technological gas analysis.

THE ORGANIC ANALYSIS OF POTABLE WATERS. By J. A. Blair, D.Sc.; 120 pp., 2 wood-cuts; 2nd edition. London: J. and A. Churchill, 1891.

The main object of this book is to elucidate the drawbacks to the oxygen and albuminoid process for the estimation of organic matter in potable waters, and to formulate a scheme based upon Kjeldahl's method which shall obviate the difficulties which stand in the way of the two first mentioned processes.

How far this has been accomplished a personal trial of the scheme proposed by each individual operator, alone can decide.

There certainly seems to be more than one point, however, which is likely to open the way for the entrance of errors quite as serious as those which may occur by reason of the shortcomings of the albuminoid ammonia process.

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There is a lot of useful information, however in the book, as in order to bring out the disadvantages of the older methods, they have been tested, by means of a series of experiments, so that the results obtained may be compared.

The albuminoid ammonia process and oxygen process at ordinary temperature are treated in Part I., the preparation of the solutions, etc., employed being given in a series of appendices appertaining to each part respectively.

The oxygen process at 100° C. is considered in Part II., and some very useful tables have been compiled in order to answer the criticisms to which this process is subjected at the outset.

Parts III. and IV. include the sulphuric acid process for organic nitrogen, and the sulphuric acid and potassium permanganate process for organic carbon.

The latter is very involved, and does not call for further comment here. The former, provided the reagents can be provided in a state of purity, appears to be capable of producing good results within a moderate space of time. The results obtained are almost without exception higher than those shown by the alkaline permanganate method, which accords with the complaints made against this process, on account of its only splitting up some two-thirds of the albuminoid nitrogen into ammonia; still it seems hardly probable that this defect should account for finding five, and in one case ten times as much ammonia as indicated by the alkaline permanganate process.

There are still one or two printer's errors which have crept into even the second edition, whilst there is something almost ludicrous to those acquainted with the sensitiveness of Nessler's solution, in the suggestion that "it is not advisable to distill or nesslerise in an atmosphere containing much ammonia."

Taking the book as a whole, however, it is one that nobody interested in water analysis, or the investigation of water for hygienic purposes, should fail to read, as it affords a comparison of the results obtained by the different processes which is useful in the extreme, whilst Part II. is full of suggestions for the modification and more accurate conduct of the various systems adopted in the application of the oxygen process.

Correspondence.

***We do not hold ourselves responsible for the opinions expressed by our correspondents.*

ANSWERS TO CORRESPONDENTS.

Student.—Use methyl orange; we should have thought you would have known that ammonia salts interfere.

G. E. H.—Yes, they are in use at several places, and it is said that the resulting sulphate is better in colour in some cases.

A. W.—We shall be pleased to avail ourselves of your kind offer.

Beta (Ceylon).—Try the following:—40 gallons raw linseed oil, 40 lbs. litharge, 20 lbs. red lead, 10 lbs. manganese dioxide, and 2 lbs. white gum shellac. Add the manganese dioxide last, and heat to 200° F., stirring well. When nearly cool, add 20 to 30 gallons of spirits of turpentine.

N. A. Co.—Thanks for your communication.

M. A. M. Co.—Thanks for your letter and enclosure, we have taken note of what you say.

B & F. Co.—Thanks for your communication, which you will notice has received attention.

H. G.—This week.

L. W. H., A. I., A. L. and Co., W. H.—Your queries are being gone into, and we shall be writing you in reference to the same shortly.

SEWAGE TREATMENT.

(*To the Editor of the Chemical Trade Journal.*)

Sir,—I should like to briefly reply to the remarks on the above subject by Messrs. Spence and Sons in your issue of January 9.

I may remark, in the first place, that I consider it only natural that Messrs. Spence should object to the conclusion come to in the two papers read at the meeting of the Society of Chemical Industry, that, although the salts of alumina are good sewage precipitants, yet the persalts of iron, one of them more particularly, are considerably more effectual, and from actual figures and quoted prices certainly cheaper.

Next let me say that the knowledge of the real practice of sewage treatment between the years 1840 and 1860 of even such men as Frankland, Odling and Letheby was so comparatively elementary and theoretical that it is perfectly useless to quote such ancient history to the chemists who have worked on this subject during the last ten years. Of course, if we are to take Messrs. Spence's argument to be that any class of compounds which were experimented with a considerable number of years ago, before the conditions of the problem were properly understood, are on that account out of court to-day, alumina salts would have to be included, as they also have been tried in many places and given up, generally I should say through the incompetence of those who tried them. That alumina salts ought not to have failed except on the score perhaps of expense is evident to my mind, because I believe that next to the persalts of iron, alumina salts are the best sewage precipitants.

The production of a dark-coloured sludge in some is a proof of one of the most valuable properties of iro a it is caused by the iron laying hold of and r insoluble the noxious sulphur compounds in the sewage, an moving them in the sludge, which subsides, the oxidising natur iron oxide causing this sulphur to be converted into the for innocuous sulphate. This is one of the superiorities of iron co over those of alumina, which does not so combine with Alumina also has no such power of acting as a carrier of oxyg possessed by hydrated oxides of iron. This property of moist iron is, of course, exemplified in its use for the purification of ga the sulphur compounds are absorbed from the gas, and are subs oxidised into sulphuric acid, and the oxide is again capable of p a further quantity of gas.

There can be little doubt that when moist oxide of iron is pu the sewage sludge which is put upon the land, it favours a oxidation of the sludge, whereby it is rendered less noxious.

With regard to alumina, this facility of oxidation and transfe its oxygen to other bodies is undoubtedly absent, otherw metal aluminum would be as easy to prepare as metallic iron. we know that it is only under conditions of intense heat that parts with its oxygen. On speaking on this point Dr. Burgh his sewage report, says: "Alumina does *not* act as an oxidiser

The chemical advantages on the side of per salts of iron, scarcely need arguing, and the question becomes one of cost, immediate future appears likely to decide this also in favour of compounds.

One or two assertions in your correspondent's letter scarcel with the fact that a representative of Messrs. Spence was prese meeting of the Society of Chemical Industry, and it is certain regretted that Messrs. Spence did not see their way to take pa adjourned discussion at the last meeting.—Respectfully yours,

Clayton, Jan. 20th, 1892. Harry Grim

SALFORD GAS.

The illuminating power is expressed in standard candl ammonia and total sulphur in grains per 100 cubic feet. bonic acid is calculated to volumes per cent. The determinati all been made on the gas supply to the Manchester Technical tory, 32, Blackfriars-street.

Date. 1892.	Illuminating power.	Ammonia.	Total sulphur.	Carboni acid.
Jan. 7	.... 14·1	.. 0·03	.. 26·80	.. 1·17
,, 8	.... 16·0	.. 0·02	.. 19·15	.. 1·33
,, 9	.... 15·8	.. 0·03	.. 22·52	.. 1·13
,, 11	.... 14·4	.. 0·01	.. 17·85	.. 1·27
,, 12	.... 14·5	.. 0·01	.. 15·15	... 1·17
,, 13	.... 14·5	.. 0·04	.. 15·76	.. 1·29
,, 14	.... 16·1	.. 0·04	.. 17·98	.. 1·13
,, 15	.... 14·4	.. 0·03	.. 18·24	.. 1·38
,, 16	.... 14·4	.. 0·04	.. 22·74	.. 1·36
,, 18	.... 13·6	.. 0·03	.. 18·53	.. 1·28
,, 19	.... 15·7	.. 0·02	.. 20·24	.. 0·70
,, 20	.... 14·4	.. 0·03	.. 17·03	.. 0·95

THE TRANSPORT OF AMMONIA.

AMMONIA has been carried in considerable quantities upper decks of steamers, but in many vessels the bott boys, or tins are stowed in the between decks. In fact, they ar times stowed in vacant cabins of cargo vessels. The recent ex of one of these receptacles has awakened attention to the pl such substances dangerously near heat. The master of the v whose ship the explosion happened unscrewed the tops of al undamaged, and thus allowed the gas to blow off. Restricti carriage of dangerous goods were imposed under the M Shipping Act, 1873, section 23 of which provides that if any sends or attempts to send by, or not being the master or owne vessel, carries, or attempts to carry, in any vessel, British or any dangerous goods, such as aquafortis, vitriol, naphtha, gunp lucifer matches, nitro-glycerine, petroleum, or any other goo dangerous nature without distinctly marking their nature on side of the packages containing the same, and also giving notice of the nature of such goods and the name and addres sender, he shall be liable to a penalty not exceeding £100.; b person sending the goods on board is merely an agent and ign the contents, the penalty is not to exceed £10. False dec makes the sender liable to a penalty of £500. The master or a a ship may refuse to take on board a vessel any suspicious p

and may require it to be opened to ascertain its contents. Clause 26 in the Act has always been looked upon as a mistake in legislation. The master of a ship is empowered to throw overboard goods of a dangerous nature which have been sent without being marked or notified of their true character, and neither the master nor the owner of the vessel shall be subject to any liability for such casting into the sea, civil or criminal, in any court. There is no reason for denouncing the carriage of ammonia by sea, but it is of the greatest importance that each special compound should be accurately defined, and that it ought not to be exposed to heat. If everything that expanded on submission to heat were interdicted, the shipping trade would be sadly hampered. For example—yeast is shipped for conveyance, and is usually carried on deck. In hot weather the casks have been broken and hoops burst from exposure to the sun, although no material damage is done. We could name other breakages, but enough has been urged to bring home the necessity for understanding what to carry and where to stow it.

Trade Notes.

THE BERKEFELD FILTER CO.—We have received a neat and handy diary catalogue from this firm. A short account of the special features of the Berkefeld filter is given at the front of the diary, which contains much useful information and is conveniently arranged.

LIQUID FUEL.—The trials which have recently been made at Spezia with petroleum in place of coal for firing the boilers in the war vessels of the Italian navy have been very satisfactory, and it is said that the boilers in several of the war vessels will be altered to admit of the use of liquid fuel.

FIRE AT A WATERPROOF WORKS.—The large waterproof works of Messrs. Piggott Bros. and Co., Booth-street, Spitalfields, London, was destroyed by fire on Thursday morning last. The damage is estimated at about £20,000.

THE PRICE OF PARAFFIN OIL.—A conference was held in London on Thursday between the managers of a Scotch mineral oil company and Mr. Bedford, the representative of the Standard Oil Company of America, with the object of arranging a new agreement for regulating the sale and the prices of paraffin in Great Britain and on the Continent during the next twelve months.

A BOGUS IODINE SPRING.—A curious fate was that of a new soap recently introduced in Germany. It was said to be made from the sediment of the water of an "iodine spring," and was just beginning to sell well, when it was discovered that the spring was a river, disguised into a spring and doctored morning and night with suitable chemicals by an ingenious promoter.

A REMARKABLE CLAIM.—Petroleum has been put to many uses and been treated in many different ways, but there is something really astounding in the proposition of a Hamburg chemist, who claims to render petroleum non-explosive by the addition of a small quantity of a mixture of bicarbonate of sodium with aniline, sulphate of lime, sulphate of magnesia, chloride of sodium, sal ammoniac and water.

DISCOVERY OF COAL IN QUEENSLAND.—An important discovery of coal is said to have been made in the Port Curtis district, at a place about fifty miles from Gladstone. The Assistant Government Geologist's report on the deposit is highly favourable. Fossil remains point to the fact that the beds belong to the upper mesozoic period. The coal is non-cokeing, and gives a white asa, and the analysis would point to its being good steam coal, although its calorimetrical power still requires testing.

SOAP ON THE ADVANCE.—Soapmaking in this country continues to flourish. The returns for the year show that the exports will exceed those of 1890 by as much as that did the former year, the figures being £503,400. in 1889, £534,500. in 1890, and £568,200 estimated for the year under review. Competition in this industry does not in England prevent large profits from being made, but in Germany attempts have been made, so far, however, without success, to syndicate their soap concerns.

THE USE OF VAPORISED PETROLEUM.—The use of vaporised petroleum for fuel in the new hot-blast heating furnace in the shrinking pit at the Washington ordnance shops is said to have been so successful that it is probable its use will be greatly extended. The officers in charge of the shops have under consideration a plan for using it in the furnaces of the boilers used in the shops, thus doing away with coal entirely. It is proposed to store the fuel in tanks sunk in the ground, at a safe distance from all buildings, and carry it by a pipe to the boiler house, where it will be vaporised and blown into the furnace.

GOLD PLATED VITRIOL RETORTS.—Apparently the faith in the power of gold not only to resist corrosion, but to be impervious to the most searching liquids, is sufficiently robust to cause an attempt to be made to protect a much more corrodible metal than platinum by its means, a German patent having lately been taken out for gilding the inside of copper vessels designed as substitutes for the ordinary platinum retorts used in vitriol manufacture. The gilding will require to be much more substantial than the translucent film commonly dignified by that name, if it is to resist the attack of boiling sulphuric acid.

CHINA GRASS OR RAMIE FIBRE.—Some of the cloths being manufactured in Yorkshire are said by buyers to contain admixtures of ramie yarn, although it is generally supposed that this fibre has not found favour in England. Considerable quantities of the yarn are now being spun in France, and much of it is known to be placed in the English market. Some time ago it was rumoured that from Irish 'bog' it had been found possible to produce yarn. This product is now actually being used as weft in many of the shoddy goods turned out in the North. Yarn from 'bog' has been shown to agents in this city, and has of course been found very weak. The shuttles used in looms working up such yarn are of a character which reduces the chances of breakage to as small a limit as possible. Special machinery is employed in the preparatory processes, about which, however, very little appears to be known, as they are kept as secret as possible. With reference to ramie yarns, many experiments have been made in the neighbourhood of Manchester, where yarns have been produced successfully, in addition to towellings and other fabrics composed of the fibre. The cost of production has, however, been found too high, and sof ar further progress appears to have been stopped.

THE MANUFACTURE OF INDIGO.—Messrs. Howe, Balch, and Co., New York, Boston, and Calcutta, importers of indigo and other dyestuffs, have just published a handsome oblong quarto volume, showing the manufacture of indigo. The illustrations, which are from photographs, give views of the office of Howe, Balch, and Co., in Calcutta, and the several stages of indigo culture and manufacture, from preparing the ground for planting to the finishing of the product for market. As the views are all taken from life, the collection gives a wonderfully clear idea of the processes, and withal is a collection of views that possess interest to all as depicting Oriental customs and industries, and especially to those engaged in dyeing or trading in dye wares.

A HAPPY SUGGESTION.—Anent the meeting of judges to discuss the decline of commercial cases in the Law Courts, which forms the subject of our leading article this week, a Manchester evening paper suggests the following preliminary decisions: That judges shall commence business at the time appointed for the sitting of the court, or at least not more than fifteen minutes after such time. That a judge of the Court of Appeal shall not interrupt counsel more than six times in the space of five minutes; other judges not more than three times in the same space of time. That judges, when they adjourn in the middle of the day for a quarter of an hour, shall return into court at the end of the quarter of an hour, or, at least not more than half an hour after that time. That judges shall not sleep when on the bench for more than half an hour in the course of the day; and when two judges are sitting together they shall not both sleep at the same time.

PRODUCTION OF AMMONIUM SULPHATE.—The following table shows the amount of sulphate of ammonia produced in the United Kingdom during the last three years:—

Amount of Sulphate of Ammonia produced in the United Kingdom.

	1890 Tons.	1889 Tons.	1888 Tons.
Gas works	102,138	100,711	92,896
Iron works	5,064	6,145	5,280
Shale works	24,730	23,953	22,072
Coke and carbonising works	2,325	2,795	2,537
	134,257	133,604	122,785

The use of sheet copper for the saturators in place of lead is extending. When the copper sheeting is sufficiently thick, no wooden frame is required as when lead is employed, and the cost of repairs is stated to be considerably less than formerly. The labour-saving system of raising the sulphate from the saturators by means of a steam-jet elevator as in use at Beckton, has been proved successful, and by obviating the necessity of keeping the saturator open, all escape of the offensive steam which rises from open saturators is prevented.

Market Reports.

TAR AND AMMONIA PRODUCTS.

A small improvement is reported in benzol, business in 90's having taken place at 2s. 1d. and 2s. 2d., and the value of 50-90's is said to be 1s. 10d. There is, however, no scarcity of benzol, as very little has so far been sold for this year's delivery. Other tar products are dull. Anthracene is quoted at 12½d. for 30% A and 9d. for 30% B, but these are merely nominal quotations. Pitch is still in good demand at old rates.

The sulphate of ammonia market rules firm, and the tone is much healthier than has been experienced for some time past. The demand has been general, although the principal requirements have been for immediate shipment to Spain, where an imposition of fresh dues after the end of the month is talked about. For delivery f.o.b. Hull, Leith, and Liverpool, the quotations now vary from £10. 10s. to £10. 12s 6d. Beckton quotations are £10. 15s, though second-hand parcels are freely offered at £10. 10s. London outside makes may be quoted at £10. 10s.

MISCELLANEOUS CHEMICAL MARKET.

The market generally for all products of the alkali trade continues steady, and there are no changes of any importance to note. Bleaching powder continues firm, with a fair demand both for spot and forward delivery at £7. 10s. nett per ton, f.o.r. makers' works, with the concession of 5s. per ton for contracts over the entire year. Caustic soda is hardly so brisk as might be desired; but prices remain steady, f.o.b. Liverpool in 10 ton lots for 74% £11. 5s., 70% £10. 5s., 60% £9. 2s 6d., and cream 60% £8. 17s. 6d. per ton, f.o b. Tyne; 77% £11. 5s. per ton. Soda ash steady all round at 1⅛d. per degree, f.o.b. Soda crystals £3. 3s to £3. 10s. Salt cake in bulk unchanged at 36s. 6d. to 38s. makers' works. Chlorate of potash 5⅜d. Chlorate of soda 7d. per lb. Recovered sulphur still scarce, and in good demand; price for prompt delivery £6. 10s. per ton, and forward £5. 15s. Sulphate of copper in limited demand at £14. 15s. per ton. White powdered arsenic has a firmer tone, more especially for future delivery. On the spot prices are ruling £10 15s. to £11. Brown acetate of lime a shade easier again on the spot Grey nominally at £10s. c.i.f. Acetate of soda £18 Quotations for aniline oil and salt are rather firmer, owing to advance in benzol. Carbolic acid crystals still offered at 5d. to 5⅛d. nett for 39'40°. Caustic potash and carbonate still continue to sell freely, and current prices are unchanged. Sulphocyanides are extremely dull. Prussiate of potash still firm at 10½d. Cyanide of potassium 98% 1s. 11d. per lb. Bichromates without change.

THE METAL MARKETS.

LONDON, Tuesday.—Pig iron dull; Scotch warrants closed at 47s. cash. Middlesbrough 38s. cash, and Hematite 47s. 4d. cash. Copper steady; Chili bars, G O B.'s and G.M.B.'s closed at £45 10s. 0d. cash, and £46. 1s. 3d. to £46. 8s. 9d. three months. Tin quiet; Straits closed at £89. 17s. 6d. to £90. cash, and £90. 2s. 6d. to £90. 12s. 6d. three months. Australian, £90. cash; English ingots, £93. 10s. to £94. Lead dull: English, £11. 5s. to £11. 10s.; Spanish, £11. 2s. 6d. Silesian spelter, ordinary, £22. 5s 0d. Quicksilver: First hands, £7. 7s. 6d. Copper shares: Cape $1\frac{13}{16}$ to $1\frac{7}{8}$; Copiapo $2\frac{7}{8}$ to $2\frac{9}{16}$; Mason and Barry 4⅞ to 5; Rio Tinto 18½ to 18⅝; Tharsis $5\frac{13}{16}$ to $5\frac{15}{16}$; Panulcillo ⅞ to 1.

GLASGOW, Tuesday.—Market dull and steady. Scotch done at 47s. cash; closing with buyers at 47s. cash, sellers ask 47s. 1d. Middlesbrough done at 38s. 0½d. cash, also at 38s. 2½d. one month; closing with buyers at 38s. cash and 38s. 2½d. one month, sellers ask 38s. 1d. cash and 38s. 3d. one month. Hematite done at 47s. 5½d. ten days, also at 47s. 7d. one month; closing with buyers at 47s. 4½d. cash, sellers ask 47s. 5d.

WOLVERHAMPTON, Wednesday.—There was a firm market to-day at quarter-day prices. Bars in good request at £8. for branded sorts, £6. 10s. merchant sorts, and £6. common. Sheets unimproved in demand, but prices rather firmer at £7. 5s. singles, £7. 10s. doubles, and £8. 5s. lattens, which are the Associated Makers' minimum rates. Hoops £6. 15s. Pigs in brisk demand at firm prices, particularly for midland sorts. Northamptons 46s., Derbyshires 46s. to 47s., Lincolns 48s. 6d. Coal buoyant at full rates.

REPORT ON MANURE MATERIAL.

There has been a good business doing in nitrogenous material at hardening prices, but phosphates continue to drag, and there is not much business to report.

Quotations for mineral phosphates remain unchanged, but the tendency is still in favour of buyers, Florida descriptions being offered freely both for prompt and for shipment.

We do not hear of any business in cargoes of River Plate bones. Quotations must, therefore, be considered as nominally £4. 5s. to £4 7s. 6d., according to size and position, U.K. or Continent. For shipment £4. 11s. 3d. would probably be business for crushed Kurrachee, and £4. 10s. for crushed Bombay and Calcutta. On spot £4. 12s. 6d. to £4. 15s. required for Bombay bone meal, but for shipment £4 12s. 6d. would be accepted, and business has been done at the price. £4. 11s. 3d. paid for a good clean parcel of Brazil bones, in bulk, ex quay Liverpool

Nitrate of soda continues to harden in price in all positions. Spot is worth 9s. 6d. per cwt., and there are no sellers of due cargoes under 9s. 7½d.; 9s. 9d. per cwt. asked for November shipments, and 9s. 7½d. paid for Octobers.

Dried blood is still enquired for, but the high prices demanded somewhat check business: 9s. 6d. to 9s. 9d. per unit of ammonia free to rails at works for home prepared. Nothing offering in River Plate. Kainit is still scarce at 42s. 6d. to 45s. per ton, in bags, delivered free to rails. Superphosphates are firm at 45s. per ton, in bulk, free to rails at works for 26%.

THE LIVERPOOL OIL AND COLOUR MARKET.

LIVERPOOL, Tuesday.

OILS.—Owing to the obsequies on Wednesday there was nothing doing in oils, and the week has been almost featureless. Palm oil has been steady with not much doing. There have been sales of Lagos at £22. 2s. 6d. to £23. per ton transit. Olive is steady, but the demand limited, and Neapolitan and Candia are quoted at £38. Linseed is without change, sellers being very steady at 19s. 6d. to 20s. 6d per cwt. in export casks. In Rape there is practically no business at all, and Refined Stettin is still nominally quoted at 32s. 6d. per cwt. Cottonseed has improved again somewhat, and is now steady, with Liverpool refined at 19s., and American 20s. per cwt. Castor oil has varied rather, ultimately hardening, good seconds Calcutta being steady at $2\frac{3}{8}$d. to 2¾d. per lb., with a fair demand, and there have been sales of first pressure French at $2\frac{13}{16}$d., sellers, however, now asking 2⅞d. per lb. There is nothing fresh in Tallow, the tone being steady, but quiet Resin early in the week showed a tendency to weaken, but the price of common remains now at 4s. 6d., and the medium qualities are firm Spirits of Turpentine have recovered, touching 25s. 9d early in the week, and now meeting a steady demand at 26s. per cwt. Petroleum is steady and unchanged, with American at 5½d. to 6⅝d. Russian refined, 4½d. to 4⅝d. per gallon.

COLOURS remain unchanged. Ochres: Oxfordshire, common, £10., medium, £12., best, £15.; Derbyshire, common, 40s., medium 50s., best, 60s. Welsh, best, 70s., seconds, 50s., and common, 18s.; Irish. Devonshire, 40s. to 45s.; French, J. C., 55s. to 60s.; M. C., 65s. to 67s. 6d. Umber: Turkish quiet. Devonshire, 50s. to 55s. White lead, red lead, and oxide of zinc unchanged. Venetian red, £6. 10s. to £10. Cobalt: Prepared oxide, 10s. 6d.; black, 9s. 9d.; blue, 6s. 6d. Zaffres: No. 1, 3s. 6d.; No. 2, 2s. 6d. Oxide of iron: common, £6.; medium, £10.; finest, £20.

THE LIVERPOOL MINERAL MARKET.

The market is somewhat firmer this week. Manganese: There are a few small arrivals to report this week. They have, however, all gone straight into consumption. Stocks have been further drawn from, and prices are again stronger. Borate, 6¼d. per lb.; sulphate, £21. 10s.; oxalate, 1s. 6d. per lb.; chloride, £15.; carbonate, £12. 10s., steady. Magnesite: Raw lump very quiet. Raw ground, £6. 10s. and calcined, £12. 10s. Bauxite (Irish Hill brand) unaltered; lump, 20s; seconds, 16s.; and thirds, 12s. French chalk: Arrivals nil, with a fair business doing G.G.B. "Angel White" brand; silvery, 90s. to 92s. 6d; prime quality, 90s. to 95s.; superfine, 105s. Barytes—Carbonate: On account of the inclement weather the production is very much reduced; prime lump 90s. to 95s.; nuts, 70s. to 80s.; whilst finest white sulphate is steady. "Angel White," No. 1, 70s.; No. 2, 60s. to 65s.; No. 3, 45s. Pumice-stone steady. Iron ore easy: Manganiferous, Santander, Irish, and Cumberland firmer; Bilbao, 6s. 3d. to 6s. 6d. Emerystone steady, No. 1 lump £5. 10s. to £6., smalls £5. to £5. 10s. Fullers' earth more inquiry; best lump, 55s.; fine impalpable ground, £7.; "Emerald" ground, 80s. Scheelite, wolfram, tungstate of soda, and tungsten metal in good demand at full prices. Chrome ore: There is a fair inquiry for both spot and forward delivery of high-class qualities; prices firm. Antimony ore and metal firmer. Asbestos very firm. Potter's lead ore of best quality steady; smalls, £12. 10s. to £13. 15s; selected lump, £14. 10s. to £15. 10s. Calamine quiet. Strontia sulphate (celestine) continues very quiet. Limespar unchanged, especially for English manufactured, old G.G.B. brand in demand at 50s (ground). Felspar quiet. Fluorspar: Best quality scarce. Ferromanganese firmer, 75%, £12; 85%, £13. 15s. Plumbago brisk: Spanish, £5.; best Ceylon lump at last quotations; Italian and Bohemian, £4. to £12. per ton. "Founders," £5. to £6.; Blackwell's "Mineraline," £10. French sand, 20s. to 22s. 6d. Ground

, £45. to £50. China clay steady; common, 18s. 6d ; good ium, 22s. 6d. to 25s.; best, 30s. to 35s. (at Runcorn). Bog ore le of iron) steady; finest quality, 22s. to 23s.

TYNE CHEMICAL REPORT.

TUESDAY.

hemicals may be said to be unchanged, a fair business doing in ch, caustic, soda, and crystals. Recovered sulphur continues emely scarce. Bleaching powder, softs, £7. 10s. per ton, ls £7. 15s. per ton; caustic soda, 77% £11. 10s. per ton, 70% s. 5s. per ton; recovered sulphur, in 2 cwt. bags, £6. 10s. ton; soda ash, 48% £5. 8s. 9d. per ton, 52% £5. 17s. 9d. ton, 56% £6 6s. 9d. per ton; alkali, 36% £4. 18s. 6d. per ton; te alkali, 48% £6 10s. per ton, 50% £6. 15s. 6d. per ton, 52% per ton; hyposulphite of soda, £7. per ton in 5-7 cwt. casks, 15s. per ton in 1 cwt. kegs; silicate of soda, 75° Tw. 13s. 6d. per ton, 100° Tw. £3. 13s. per ton, 140° Tw. £4. 2s 6d. ton; soda crystals, in casks, £3. 3s. 6d. per ton gross weight; cwt. bags £3. 3s. 6d. per ton net weight; chlorate of potash, d. per lb. less 6%; pearl hardening, £3. 10s. per ton nett; e white sulphate of alumina, £4. 10s. per ton nett; blanc fixe, 10s. per ton nett; chloride of barium, £7. 10s. per ton nett; ate of baryta crystals, £17. per ton, ground £17. 10s. per ton; hide of barium, £7. per ton; carbonate of alumina, £28. 10s. per ; aluminate of soda, £33. 10s. per ton; hydrate of barium, £11. ton.

alt quiet, at 9s. per ton f.o.b. Tees.

oals: A conference was held in Newcastle last week between esentatives of the Durham owners and the men, relative to a ction in the men's wages of ten per cent. The coal owners are ng to submit the question to open arbitration, or to consider any ter proposal made by the Federation Board. Market: Best humbrian steam, 10s. to 10s. 6d. per ton f.o.b.; Durham gas od demand at 9s. to 9s. 6d. per ton f.o.b.; bunker coals unged; manufacturing coals quiet. Coke firm, at from 16s. to 6d. per ton f.o.b.

WEST OF SCOTLAND CHEMICALS.

GLASGOW, TUESDAY.

e partial recovery in sulphate of ammonia continues to be held, rticle being even a little firmer, as it could not very well help ; considering the small stock there is available for prompt ery. The price is now £10. 10s., but if stocks are low, buyers are ery eager, and so the recovery is only of moderate compass. In narket at present there are no dealings on the forward basis, on nt of there being no buyers. Shipments out of Leith last week 413 tons.

raffins are all nominally unchanged in price, but the position has er deteriorated, and there has been something like the beginning panic amongst holders of mineral oil shares, values having come a seriously in all sorts, and disastrously in the most. The fear is a in paraffin scale and wax, owing to the large imports from abroad, : being the only products just now that stand (for the Scotch ers) at a distinctly profitable mark. The convention to debate ital matter (future prices) meets in London next week.

here are no changes of value amongst the ordinary chemicals, but ave perhaps rather more of briskness infused, although dealings still only on little more than retail scale.

hief prices current are:—Soda crystals £3. 2s. 6d., nett Tyne; alum ump, £5. 10s., nett Glasgow; soda ash, 1⅜d., less 2½%, Tyne; tic soda, white, 74°, £11. 5s., 70/72°, £10. 5s., 60/62°, £9. 2s. 6d., cream 60/62°, £8. 17s. 6d., all nett Liverpool; bicarbonate of soda, :wt. casks, £6. 15s., and 1 cwt. casks, £7. nett Tyne; re- d alkali, 1⅝d., less 2½% Tyne; bleaching powder, £7. 7s. 6d. Tyne; saltcake, 37s. 6d.; borax, English, refined, £29. 10s. and ucic acid, £37. 10s., nett Glasgow; bichromate of potash, d., less 10% for Scotch and English deliveries (for export d., less 10% f.o.b. Glasgow); bichromate of soda, 2¾d., 10% for Scotch and English deliveries (for export 2½d., less 10% b. Glasgow); chlorate of potash, 5⅜d., less 5% any port; nitrate soda, 9s. 4½d.; sulphate of ammonia, to £10. 10s., f.o.b. th; salammoniac, first and second white, £35. and £33., 2½% any port; sulphate of copper, £15. less 5% Liverpool; ffin scale (hard), 2 15/16d., and soft 2 13/16d. to 3d. per lb.; paraffin , 120°, semi-refined, 3⅝d. to 4d.; paraffin spirit (naphtha), 7d. a on; paraffin oil (burning) 5d., 5¼d. and 5½d. according to kind, works for Scotch buyers (English orders about 1d. lower); ditto ricating), 865°, £3. 15s. to £4., 885°, £5. 5s. to £7., and 890/895°, to £8. Week's imports of raw sugar at Greenock were 9,200

New Companies.

JOHANNESBURG METALLURGICAL COMPANY, LIMITED.—This company was registered on the 8th inst., with a capital of £50,000, in £1. shares, to acquire and work the letters patent granted to Mr. Jean B. Garbe for the chemical process for the treatment and extraction of gold, silver, and copper ore, and all the other letters patent, inventions, machinery, plant, effects, etc., of the Ore Reduction and Smelting Co., of South Africa, Limited. The subscribers are:—

	Shares.
H. C Porter, 50, Eaton-terrace, S.W.	1
J. T. Bedborough, 32, Freelands-road, Bromley, Kent	1
A. Roe, 33, Coopersale-road, Homerton, N.E., clerk	1
A. W. Frank, Park Villa, Wilmot-road, Leyton, clerk	1
W. H. Winckworth, 55, St. Augustine's-road, Camden-square, N.W	1
G. F. Dawkins, 96, Bramah-road, Brixton, clerk	1
H. G. Cook, 34, Walsingham-road, Clapton, N.E., clerk	1

O'BRIEN AND BUTCHER, LIMITED.—This company was registered on the 11th inst., with a capital of £25,000., in £1. shares, to acquire and carry on the business of corn cake, seed, and artificial manure merchants carried on by Messrs. A. O'Brien and H. W. Butcher, and with a view thereto to enter into an agreement with the above-mentioned persons. The subscribers are:—

	Shares.
H. W. Butcher, 37 and 38, Mark-lane, corn merchant	1
A. O'Brien, 37 and 38, Mark-lane, corn merchant	1
A. Hale, Somerden, Cheddingstone, Kent, farmer	1
J. Mead, Tring Station, Herts., corn merchant	1
W. Dwight, Berkhampstead, pheasant breeder	1
A. T. Ramsey, 1, Revendey-road, Bermondsey, S.E., clerk	1
C. W. Taylor, 57, St. James'-road, S.E., clerk	1

SEVERN TINPLATE AND MANUFACTURING COMPANY, LIMITED.—This company was registered on the 12th inst, with a capital of £10,000., in £100. shares, to acquire and carry on the Iron and Tin Plate Works, situate at Caldicot, Monmouth. The subscribers are:—

	Shares.
D. Williams, Osborn House, Pontypool	1
S. J. Hall, Wawr Vawr, near Newport	1
W. T. Jones, Mount Villa, Caldicot, near Chepstow	1
G. Wilkinson, Risca, Mon.	1
D. T. Richards, The Meadows, Risca, Mon.	1
H White, Newport, Mon.	1
E. A. Taylor, Risca, Mon	1

TYNE DOCK LAND COMPANY, LIMITED.—This company was registered on the 12th inst., with a capital of £60,000. in £12. shares, to adopt and carry into effect an agreement to be made with the Jarrow Chemical Company, Limited, and Mr. J. Stableford, its liquidator, being a reconstruction agreement of the Jarrow Chemical Company, Limited, to lay out all or any of the real estate acquired for building purposes, and with other objects. The subscribers are:—

J. C. Stevenson, M.P., Westoe, South Shields	900
E. J. Garwood, Tynemouth	200
N. Stevenson, 51, Wimpole-steeet, W., dental surgeon	158
F. I. Stevenson, 41, Holborn Viaduct, E.C.	171
J. J. Stevenson, 4, Porchester Gardens, W., architect	500
J. S. Stevenson, Westoe, South Shields, electrical engineer	100
A. S. Stevenson, Tynemouth	500

Gazette Notices.

PARTNERSHIPS DISSOLVED.

A. G. ANNETT AND L. W. HAWKINS, under the style of J. Beedzler and Co., Norton Folgate, City, chemists and druggists.

H. S. HIRST, H. F. ANDERTON, AND F. S. ANDERTON, under the style of S. Anderton and Sons, Bradford, soap manufacturers; as far as regards H. S. Hirst.

F. W. H. TYRRELL AND T. N. TUBB, under the style of Tyrrell and Co., West Cowes, Freshwater, and elsewhere in the Isle of Wight, mineral water merchants.

HARDMAN AND OPENSHAW, Stafford, mineral water and cordial manufacturers; as far as regards J. Openshaw.

WELLINGTON, JONES, AND WHITE, Lydney, colour manufacturers.

F. J. KING, P. G. SHADBOLT, AND J. V. M. KING, Harefield and Caledonian-road, N., under the style of Coles, Shadbolt and Co., cement, brick, and tile manufacturers; as far as regards F. J. King.

O'BRIEN AND BUTCHER, Mark-lane and Corn Exchange, City, oil cake merchants.

J. CONROY, G. W HUGHES, AND J. W. WORSEY, carrying on business as the St. Helens Metal Recovery Co., St. Helens; as far as regards G. W. Hughes.

A. W. ROBINSON, C. E. BRITTAIN, AND F. J. FAIRBAIRNS, under the style of W. Gammon and Co., Birmingham, glass manufacturers

BANKRUPTCY ACTS 1883 AND 1890.

Receiving Orders.

HARDING, JOSEPH, Stratford-road, Kensington, late of Park-street, Camden Town, grocer and oilman.

DOWNING, JAMES, AND CORK, SAMUEL (trading as the Rose Vale Brick and Tile Co.), Chesterton, contractors, brick and tile manufacturers.

Adjudications.

HARDING, JOSEPH, Stratford-road, Kensington, late of Park-street, Camden Town, grocer and oilman.

LYNN, WILLIAM, Maidenhead and Woolburn, brick manufacturer,

DOWNING, JAMES, AND CORK, SAMUEL (trading as the Rose Vale Brick and Tile Co.), Chesterton, contractors, brick and tile manufacturers.

The Patent List.

This list is compiled from Official sources in the Manchester Technical Laboratory, under the immediate supervision of George E. Davis and Alfred R. Davis, who report professionally upon the value of Chemical Patents.

APPLICATIONS FOR LETTERS PATENT.

Improvement in Furnaces. E. Brook. 138. January 4.
Improved Dyeing Vats. A. Dreze. 148. January 4.
Saturating Gases with the Vapour of Volatile Fluids. A. T. Danks. 154. January 4.
Improvements in Glazing Earthenware Articles. T. H. Hunt. 165. January 5.
Smoke Consuming Apparatus. W. H. Faulkner. 167. January 5.
Fuel Economiser for Boilers. J. McLaren. 183. January 5.
Evaporating and Incinerating Alkaline Lyes. A. S. Caldwell. 192. Jan. 5.
Air and Gas Compressing Engines. O. Imray. 202. January 5.
Producing Insoluble Chlorides Direct from Metals. S. C. C. Currie January 5.
Separation of Water from Heavy Mineral Oils. C. T. J. Vautin January 5.
Utilising Electrical Energy for Heating Water, etc. A. B. Wookes January 6
Fuel Economising and Smoke Diminishing Furnaces. J. Burton Neale. 267. January 6.
Colouring Matters. C. D. Abel. 277. January 6.
New Chemical Food. A. D. McKay. 280. January 6.
Improved Dyeing, Scouring, Bleaching, Sizing, Carbonising and I Machine. E. Woodcock, senr., N. O. Woodcock and E. Woodcock 282. January 6.
Improvements in Obtaining Cyanogen Compounds. R. Pollock January 7.
Smoke Consumers. E. Adams. 336. January 7.
Improved Azo Colouring Matters. Read Holliday & Sons, Ltd. 366
Improvsd Manufacture of New Sulphoacid of Alpha Naphthyla Read Holliday & Sons, Limited, and T. Holliday. 267. January 7.
Coating Plates with Tin, Terne, or other Alloys. H. Hall. 392.
Stone Breakers and Ore Crushers. R. Broadbent. 394. January 8.
Improvements in the Manufacture of Paper and Apparatus Th H. Richardson and H. Glenny. 433. January 8.
Securing the Lids of Paint Kegs. B. B. Haresceugh. 464. January
Improvements in the Manufacture of Coal Gas. J. C. Martin. 482.

IMPORTS OF CHEMICAL PRODUCTS

AT

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending January 9th.

Acetate of Lime—
U. S., 378 pks. Johnson & Hooper

Alkali—
France, 100 c. Arnati & Harrison

Alum—
Holland, 16 pks. Ohlenschlager Bros.

Ammonia—
U. S., 125 pks. Tweedy & Co.

Barytes—
Germany, 72 cks. O'Hara & Hoar
,, 23 W. Harrison & Co.
Holland, 9 D. Storer & Sons

Borax—
Italy, 30 pks. M. D. Co.
,, 30 Burton, Baker & Co.

Borate of Manganese—
Germany, 1 pk. Becker & Ulrich

Brimstone—
Italy, 200 t. Brandram Bros. & Co.

Carbolic Acid—
Holland, 30 pks. F. W. Berk & Co.

Carbonic Acid Gas—
Holland, 25 pks. Phillipps & Graves

Caoutchouc—
Germany, 170 c. Proctor Bros.
Madagascar, 11 ,, ,,
,, 6 S. Figgis & Co.
Zanzibar, 70 L. & I. D. Jt. Co.
,, 11 Price, Boustead & Co.
Rangoon, 211 L. & I. D. Jt. Co.
Madagascar, 42 Kleinwort, Sons & Co.
Zanzibar, 10 Anderson, Weber & Smith
Portugal, 30 Prop. Bull Wf.
U. S., 87 ,, ,,
Savanilla, 16 ,, ,,

Caustic Potash—
France, 100 c. Petri Bros.
,, 17 cks. Beresford & Co.
,, 29 dms. Spies Bros. & Co.

Chemicals *(otherwise undescribed)*
Germany, 12 pks. T. H. Lee
,, 9 A. & M. Zimmermann
,, £10 Beresford & Co.
,, 8 pks. Phillipps & Graves
,, 10 W. Burton & Son
,, 17 F. Stahlschmidt & Co.

Copperas—
Germany, 10 pks. B. & N. Wf. Co. Ltd.

Copper Pyrites—
Spain, 700 t. Hill & Co.

Cream of Tartar—
France, 5 pks. B. & F. Wf. Co. Ltd.
,, 13 W. C. Bacon & Co.
,, 12 Bessler, Waechter & Co.
,, 2 W. Johnston & Co. Ld.
Holland, 4 Middleton & Co.
,, 12 B. & F. Wf. Co. Ltd.
Spain, 10 W. C. Bacon & Co.
,, 7 B. & F. Wf. Co.
Italy, 48 Thames S. T. & L. Co.
,, 10 Fellows, Morton & Co.
France, 5 Ross & Deering
Italy, 19 Howards & Sons

Dyestuffs—
Argols
Cape, 10 pks. King, Son & Co.
Cutch
Rangoon, 11 pks. Middleton S. S. Wf. Co.
,, 250 Elkan & Co.
,, 1,369 Arracan Co. Ltd.
,, 1,000 A. & G. Milne & Co.
Singapore, 80 L. & I. D. Jt. Co
Rangoon, 250 Wallace Bros.
,, 700 H. A. Litchfield & Co.
Extracts
Denmark, 2 pks. Bailey & Leetham
France, 50 Prop. Chmblns. Wf.
Austria, 150 A. J. Humphrey
Gambier
Singapore, 168 pks. Elkan & Co.
,, 84 H. Lambert
,, 1,007 L. & I. D. Jt. Co.
,, 865 E. Boustead & Co.
,, 219 Adamson, Gilfillan & Co.
Indigo
E. Indies, 102 chts. Elkan & Co.
,, 8 Hicks, Nash & Co.
,, 20 Ralli Bros.
,, 15 Patry & Pasteur
,, 7 E. Bower & Co.
,, 107 T. Ronaldson & Co.
,, 23 Phillipps & Graves
,, 27 F. Stahlschmidt & Co.
,, 33 G. Ward & Sons
,, 9 F. Stahlschmidt & Co.
,, 23 F. Huth & Co.
,, 3 Arbuthnot, Latham & Co.
,, 16 F. W. Heilgers & Co.
,, 26 T. Barlow & Bros.
,, 9 J. Forsey
Holland, 45 Phillipps & Graves
E. Indies, 438 L. & I. D. Jt. Co.
,, 166 Patry & Pasteur
,, 56 Parsons & Keith
Myrabolams
E. Indies, 919 pks. Hoare, Wilson & Co.
Orchella
Canary, 5 pks. Hammond & Co.
Saffron
France, 2 pks. Stockwell & Co.
Spain, 1 Dakin Bros.
,, 1 Prop. Chmblns. Wf.
Sumac
Italy, 500 pks. Sojeuth
,, 750 Beresford & Co.
,, 350 E. & E. Arbib

Tanners' Bark
Belgium, 12 t. Union L. Co.
U. S., 23 Lindsay, Bird & Co.
Belgium, 22 Oastler, Palmer & Co.
,, 21 Bevington & Son
Melbourne, 23 Baxter & Hoare
Valonia
A. Turkey, 40 t. Mavrro, Valieri & Co.
,, 6 Hicks, Nash & Co.
,, 47 J. Greaves
,, 82 A. & W. Nesbitt

Farina—
Germany, 100 pks. Hernu, Peron & Co.
,, 1,000 C. F. Webster & Co.
Singapore, 81 L. & I. D. Jt. Co.
Italy, 20 C. Pavia

Glucose—
U. S., 60 pks. 60 c. Johnson & Son
,, 50 300 Soundy & Son
,, 250 250 Barrett, Tagant & Co.
,, 250 250 L. Norman & Co.
,, 25 141 Ohlenschlager Bros.
,, 50 280 F. Beck
,, 640 1,643 R. G. Hall & Co.
,, 100 550 T. M. Duche & Sons
,, 100 600 J. Knill & Co.
,, 32 160 Bot. & Nich. Wf. Co.
France, 20 20 Prop. Chmblns. Wf.
,, 120 120 Barrett, Tagant & Co.
U. S., 1,168 3,130 L. Sutro & Co.
,, 100 550 Pillow, Jones & Co.
,, 700 700 J. Forsey
,, 300 1,650 Prop Chmblns. Wf.
Holland, 20 160 J. Knill & Co.
France, 200 200 J. Barber & Co.
U. S., 100 100 Allan Bros. & Co.

Manure—
E. Indies, 1 t. R. Silberrad & Son
,, 22 G. H. Wilson & Sons
U. S., 8 C. A. & H. Nichols
Germany, 21 T. H. Lee
,, 400 F. W. Berk & Co.
E. Indies, 50 W. H. Carey & Son

Naphtha—
Germany, 9 drs. Lister & Biggs
Belgium, 7 H. Lorenz
,, 34 pks. Stein Bros.
Germany, 14 cks. ,, ,,
Holland, 100 pks. Lister & Biggs

Ochre—
France, 43 cks. W. Harrison & Co.
,, 50 Burrell & Co.
Italy, 9 ,, ,,
Germany, 12 Phillipps & Graves

Painters' Colours—
Germany, 12 pks. C.
,, 3 cks 3 H. J
Singapore, 3 cas. L.
Italy, 14 Br
Germany, 3 W. I
U. S., 117 brls. B
France, 10 pks. W. I
Germany, 32 T. H
,, 1 L.
Holland, 3 J
,, 3 Magee,

Paraffin Wax—
U. S., 402 brls. Prod. Br
,, 60 C. J. A
,, 59 McDougall &
,, 500 J. H. Usma
,, 385 H. Hill
,, 60 A M
,, 213 E & H. Hol
,, 60 McDougall &

Plumbago—
Ceylon, 93 brls. H.
,, 278 Hoare, Wils
,, 93 H. A. Litchfie
,, 38 Beresfor
,, 289 Prop.
,, 288 L. & I. D
,, 54 J. Thredde
Germany, 20 cks. Pokorny
Holland, 81 brls. B.
Ceylon, 365 R. G. H
,, 177 Prop.
Germany, 67 cks. B.

Potassium Bichromate—
Holland, 20 pks. A. & M.

Potassium Carbonate—
France, 3 c. Spies Br

Potassium Hydrate—
Holland, 3 pks. Spies Br
France, 6 cks. ,,

Potassium Muriate—
Germany, 1,016 pks. Perkins

Potassium Permanganat
Germany, 10 pks. H

Saltpetre—
Germany, 3 cks. Cra
E. Indies, 1,633 bgs. R
,, 1,282 Co-op. Lgt

Soda—
Holland, 1,000 c. Jac

ım Acetate—
ıce, 9 pks. H. Lorenz
10 Lister & Biggs
ım Hyposulphite—
and, 100 pks. Beresford & Co.
ım Sulphate—
land, 37 pks. Prop. Dowgate Dk.
r of Lead—
many, 50 pks. Beresford & Co.
bourne, 4 J. Gavin, Birt & Co.
aric Acid—
land, 16 pks. Domeier & Co.
,, 34 W. C. Bacon & Co.
,, 16 J. Smidt
,, 20 Middleton & Co.
, 3 E. & E. Arbib
amarine—
land, 2 cks. Phillipps & Graves
,, 20 Thms. S. T. & L. Co.
,, 20 A. G. Souttar & Co.
many, 4 H. Lambert
,, 110 pks. G. Steinhoff
land, 7 cs. Haeffner, Hilpert & Co.
,, 5 Hernu, Peron & Co.
te Lead—
gium, 20 cks. Zumbeck & Co.
,, 20 brls. Ross & Deering
many, 11 cks. T. T. Creed
,, 4 Haeffner, Hilpert & Co.
,, 29 H. Lambert
land, 54 T. & W. Farmiloe
many, 37 Randall Bros.
,, 26 Petri Bros.
,, 36 Magee, Taylor & Co.
,, 24 Burrell & Co.
,, 18 W. Croft
,, 23 D. Storer & Sons, Ld.
,, 22 M. Ashby, Ld.
,, 18 Fenner & Co.
land, 15 S. H. Willoughby
e Oxide—
land, 250 brls. M. Ashby, Ld.
many, 51 cks. ,, ,,

LIVERPOOL.

Week ending January 14th.

ytes—
transit, 42 cks.
terdam, 2
ate of Lime—
paraiso, 848 bgs.
fagasta, 1,812 Cockbane, Allardice & Co.
utchouc—
ture, 26 sks. Cunard S. S. Co.
inose—
nae, 173 rolls
per Pyrites—
elva, 1,150 t. Matheson & Co.
am of Tartar—
terdam, 4 cks.
stuffs—
ingois
tras, 4 cs. N. D. Frangopulo & Co.
Cochineal
s Palmas, 13 bgs. Swainston & Co.
Myrabolams
mbay, 334 bgs.

Sumac
Trieste, 50 bgs.
Palermo, 250 50 bales
,, 300 J. Kitchin
Valonia
Syra, 100 bgs. G. T. Scrini
,, 327
Smyrna, 2
Yellow Berries
Smyrna, 27 bgs. C. & G. Gulbenkean & Co.

Farina—
Fiume, 100 bls.
Glucose—
New York, 50 brls.
Iron Oxide—
Trieste, 14 brls.
Litharge—
Rotterdam, 14 cks.
Manganese Ore—
Valparaiso, 230 t.
Coquimbo, 1,000
Muriatic Acid—
Havre, 1 css. Cunard S. S. Co.
Nitric Acid—
Havre, 2 css. Cunard S. S. Co., Ltd.
Ochre—
Marseilles, 31 cks. B. Young
Paraffin Wax—
New York, 11 brls.
Phosphate—
Dunkirk, 500 t. Phos. Guano Co.
Pitch—
Bordeaux, 25 cks.
Marseilles, 94
Potash—
Rouen, 40 cks. Co-op. W'sale Society, Ltd.
Potassium Carbonate—
Hamburg, 4 cks.
Pyrites—
Huelva, 1,600 t. Tennants & Co.
Soap—
Philadelphia, 900 cs 50 crts.
New York, 900 bxs. 50
Sulphur Ore—
Huelva, 1,047 t. Matheson & Co.
Sulphuric Acid—
Havre, 1 cs. Cunard S. S. Co.
Tartar—
Bordeaux, 15 cks.
Tartaric Acid—
Rotterdam, 16 cks.
Ultramarine—
Havre, 110 cs. Cunard S. S. Co., Ltd.
Trieste 5
Rotterdam, 4 cks.
Verdigris—
Bordeaux, 2 cks.
Waste Salt—
Hamburg, 100 bgs.
Zinc Oxide—
Antwerp, 90 brls. 30 cks.
Rotterdam, 100
St. Nazaire, 55
Zinc White—
Rotterdam, 100 cks.
,, 10 O. & H. Marcus

GLASGOW.

Week ending January 14th.

Alum—
Hamburg, 40 cks.
Aluminium—
Antwerp, 1 css.
Barytes—
Rotterdam, 50 cks.
Cellulose—
Hamburg, 274 bales
Cream of Tartar
Rotterdam, 14 cks.
Dyestuffs—
Alizarine
Rotterdam, 34 brls. 252 cks.
Extracts
Antwerp, 8 cks.
Pitch—
Boston, 8 brls.
Sodium Acetate—
Antwerp, 5 cks.
Waste Salt—
Hamburg, 279 cks.
White Lead—
Rotterdam, 101 cks.
,, 23 J. Rankine & Sons
Zinc Oxide—
Antwerp, 75 cks.
New York, 100 brls. N'rth Brit. Rubber Co.
Zinc White—
Rotterdam, 250 cks.

TYNE.

Week ending January 9th.

Alumina—
Copenhagen, 88 cks.
Alum Earth—
Hamburg, 18 cks. Tyne S. S. Co.
Barytes—
Rotterdam, 69 cks. Tyne S. S. Co.
Copper Precipitate—
Pomaron, 120 t. 2 qrs. 16 lbs. Mason & Barry
Huelva, 369 t. Scott Bros.
Manganese—
Rotterdam, 3 cks. Tyne S. S. Co.
Pyrites—
Huelva, 2,570 t. Scott Bros.
Pyrites Sulphate—
Huelva, 2,060 t Scott Bros.
Sulphur Ore—
Pomaron, 2,400 t. Mason & Barry

HULL.

Week ending January 7th.

Acetic Acid—
Hamburg, 20 cks. Furley & Co.
Barytes—
Bremen, 24 cks. Veltmann & Co.
,, 45 105 bgs.
Antwerp, 10

Chemicals *(otherwise undescribed)*
Stettin, 27 cks. Wilson, Sons & Co.
Hamburg, 9 25 cs. Wilson, Sons & Co.
Dunkirk, 21 Wilson, Sons & Co.
Antwerp, 9 ,, ,,
Cobalt Oxide—
Flushing, 6 cks.
Dyestuffs—
Alizarine
Rotterdam, 27 cks. 1 cs. W. & C. L. Ringrose
Farina—
Ghent, 160 css. Wilson, Sons & Co.
Naphthyalamine—
Rotterdam, 1 ck. W. & C. L. Ringrose
Phosphate—
Ghent, 1,003 bgs. Wilson, Sons & Co.
Pitch—
Rotterdam, 44 cks. G. Lawson & Son
Saltpetre—
Hamburg, 4 brls. Wilson, Sons & Co.
Soda—
Rotterdam, 10 cks. Lawson & Son
Ultramarine—
Bremen, 2 cks. 3 css.
Waste Salt—
Ghent, bls. Wilson, Sons & Co.
White Lead—
Rotterdam, 9 cks. Blundell, Spence & Co.
Antwerp, 33 Bailey & Leetham

GOOLE.

Week ending December 30th.

Caoutchouc—
Boulogne, 8 cks.
Copper Pyrites—
Seville, 1,200 t.
Dyestuffs *(otherwise undescribed)*
Boulogne, 27 cks. 2 css.
Dyestuffs—
Alizarine
Rotterdam, 63 brls.
Fustic
San Juan del Sur, 720 t.
Madder
Rotterdam, 3 brls.
Farina—
Hamburg, 10 cs. 1,410 bgs.
Potash—
Dunkirk, 8 cks.
Saltpetre—
Hamburg, 14 cks. 8 brls.
Waste Salt—
Hamburg, 1,218 bgs.

GRIMSBY.

Week ending January 2nd.

Zinc Ashes—
Antwerp, 16 pks.

EXPORTS OF CHEMICAL PRODUCTS

OF

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Period ending January 13th.

ds—
sseldorf, 156 btls. £270
logne, 653 975
anghai, 5 cs. 21
ellington, 6 cks. 26
ston, 14 cs. 23
all—
ong Kong, 8 c. £13
braltar, 2 2
n Cake—
rdeaux, 5 t. 14 c. £25
ris, 3 1 140

Aluminous Cake—
Calcutta, 34 t. 3 c. £150
Ammonia—
Monte Video, 12 cs. 10 pks. £12
Antwerp, 2 8
Bombay, 10 drs. 13
Ammonium Salts—
Yokohama, 6 t. £208
Hiogo, 10 c. 17
Ammonium Carbonate—
Monte Video, 1 t. £32
B. Ayres, 2 70
Ammonium Chloride—
Rotterdam, 12 c. £10

Ammonium Sulphate—
Ghent, 95 t. £1,000
Treport, 21 220
Valencia, 200 2,010
Bordeaux, 10 3 c. 105
Rotterdam, 101 3 1,160
Dunkirk, 362 18 2,675
Cologne, 132 12 1,325
Hamburg, 918 12 9,551
St. Johns, N B., 1 11
Natal, 10 4 103
Demerara, 7 18 80
Arsenic—
Libau, 20 t. 4 c. £256
Lyttleton, 1 15 25
Bisulphite of Lime—
Cape Town, 1 t. 1 c. £13

Borax—
Hamburg, 16 cks. £125
Borax Crystals—
B. Ayres, 2 c. 6
Brimstone—
Bombay, 72 brls. £129
Philadelphia, 4 t. 14 c. £178
Carbolic Acid Crystals—
Hamburg, 1 t. 16 c. £60
Yokohama, 12 29
Danzig, 18 26
Hiogo, 1 10 71
Dusseldorf, 19 19 1,147
Leghorn, 16 30

Carbonic Acid Gas—
Bermuda, 20 tubes £100
Bordeaux, 12 30
Carbon Bisulphide—
Monte Video, 12 cs. £16
Caustic Soda—
Newcastle, 8 c. £5
Sydney, 3 t. 1 45
Calcutta, 15 170
Lyttleton, 12 8
Nelson, 4 11 60
Auckland, 5 6 53
Chemicals *(otherwise undescribed)*
Auckland, 3 pks. £26
Wellington, 3 16
New York, 7 22
Adelaide, 20 20 kgs. 40
E. London, 4 cs. 17
Cape Town, 32 1 66
Calcutta, 6 t. 12 c. 21 183
Madras, 11 pks. 15 kgs. 43
Brisbane, 23 35
Chloride of Lime—
Natal, 10 cs. £10
Baltimore, 10 t. 3 q. 84
Citric Acid—
Lisbon, 5 cks. £42
Oporto, 4 c. 30
Brussels, 10 84
Sydney, 5 36
B. Ayres, 1 8
Algoa Bay, 2 cs. 17
Porto Alegre, 1 9
Cologne, 5 37
Rotterdam, 2 6 117
Amsterdam, 8 kgs. 60
Yokohama, 5 36
Seville, 10 74
Hamburg, 1 t. 3 168
Trieste, 1 10 217
Melbourne, 10 1 218
Libau, 1 10 cks. 527
Coal Products—
Aniline Salts
New York, 40 pks. £350
Anthracene
Rotterdam, 420 cks. £3,528
Aniline Oil
New York, 10 drs. £400
Aniline
Calcutta, 2 cs. 2 pks. £259
Benzol
Rotterdam, 95 drs. 35 cks. £1,884
Boulogne, 25 222
Treport, 24 423
Creosote
Monte Video, 2 cs. £16
Naphtha
Melbourne, 10 drs. £20
Brisbane, 10 11
Calais, 2 cks. 28 brls. 83
Rotterdam, 65 pks. 125 runs. 1,500
Pitch
Malta, 36 brls. 16 fkns. £15
Delagoa Bay, 173 pks. 14
Dunkirk, 734 t. 1,279
Sablesd'Olonne, 850 1,445
Alexandria, 600 brls. 125
Antwerp, 446 t. 790
Christiania, 60 6
New York, 32 cks. 60
Melbourne, 40 23
St. Johns, N.B., 150 46
Philadelphia, 250 140
Paraffin Wax
E. London, 58 cs. £330
Tar
Mauritius, 15 cks. £11
Bombay, 25 rnlts. 14
Delagoa Bay, 173 pks. 6
Toluol
Treport, 16 cks. £52
Rotterdam, 17 50
Copper Sulphate—
Antwerp, 5 t. £70
Rouen, 9 19 c. 140
Marseilles, 29 18 424
Treport, 4 12 80
Rotterdam, 5 70
Messina, 17 12
Leghorn, 9 4 127
Corrosive Sublimate—
Constantinople, 1 c. £13
Cream of Tartar—
Pt. Chalmers, 5 c. £24
Melbourne, 1 t. 97
B. Ayres, 5 cs. 25
Auckland, 5 27
Brisbane, 10 51
Sydney, 1 3 30 css. 257
Fertilizers—
Valencia, 500 t. 18 c. £5,004
Guano—
Jersey, 109 t. 8 c. £944
Demerara, 14 144
Manure—
Amsterdam, 9 t. 17 c. £76
Treport, 60 410
Havre, 25 130
Cherbourg, 120 520
Hamburg, 350 3,850
Bordeaux, 40 280
Genoa, 242 5 1,196
Pasages, 39 12 300
Ghent, 290 3,190
Jersey, 291 13 2,648
Kingston, 14 102
Demerara, 205 15 2,073
Berbice, 20 205
Mirbane—
Hamburg, 10 css. £44
Sydney, 10 48
Adelaide, 10 c. 37
New York, 30 100
Phosphorus—
Lisbon, 2 css. £14
Phosphoric Acid—
Mauritius, 25 t. £550
Potassium Chlorate—
Genoa, 2 css. £41
Calcutta, 5 c. 13
Sa mmoniac—
Mersina, 6 c. £11
Salicylic Acid—
Melbourne, 3 cs. £84
Sydney, 2 56
Saltpetre—
La Guayra, 8 c. £10
Natal, 10 12
Rio de Janeiro, 23 t. 2 518
B. Ayres, 14 15
Saltpetre Crystals—
Bombay, 10 c. £11
Sheep Dip—
B. Ayres, 500 cs. £1,500
Sydney, 213 drs. 200
Algoa Bay, 572 470
Mosse Bay, 48 20
Stanley, F. I., 25 cks. 150
E. London, 1,100 45 404
Cape Town, 3 t. 14 c. 120
Calcutta, 155 35
Soda Crystals—
Natal, 6 c. £2
Sydney, 21 t. 9 77
Calcutta, 2 2 8
Soda Tartrate—
Oporto, 2 c. £7
Sodium—
New York, 3 t. 3 c. £601
Sodium Acetate—
Amsterdam, 3 cks. £30
Sodium Bicarbonate—
Kingston, 7 c. £5
Algoa Bay, 20 6
Fremantle, 5 4
Invercargill, 1 t. 5 10
Sydney, 5 2
Rangoon, 2 4
Pt. Chalmers, 1 5 9
Sodium Carbonate—
Algoa Bay, 5 c. £2
Rangoon, 5 6
Sodium Sulphate—
Ghent, 110 t. £165
Sulphur—
Algoa Bay, 50 kgs. £39
E. London, 150 pks. 92
Sulphur Flowers—
E. London, 60 pks. £38
Sulphuric Acid—
Algoa Bay, 40 css. 43 drs. £92
Madras, 14 18
Superphosphate—
Lyttleton 3 t. £15
Tartaric Acid—
Algoa Bay, 2 cs. £14
Bombay, 12 75
B. Ayres, 1 c. 6
Invercargill, 2 12
Porto Alegre, 4 33
Sydney, 20 pks. 126
Brisbane, 17 107

LIVERPOOL.

Fortnight ending January 13th.

Alum—
Lisbon, 1 t. 18 c. £9
Calcutta, 19 14 100
Rosario, 19 5
Valparaiso, 9 15 51
Alexandria, 14 10 72
Constantinople, 4 20
Havana, 10 5 1 q. 50
Alum Cake—
Montreal, 5 t. 4 c. 2 q. £22
Sorel, 5 3 22
Calcutta, 23 11 1 75
Ammonium Carbonate—
Vigo, 8 c. 3 q. £14
Messina, 4 7
Monterey, 6 1 12
Marseilles, 19 32
Santander, 15 2 25
Ammonium Chloride—
Antwerp, 15 c. 2 q. £15
New York, 9 t. 17 245
Philadelphia, 4 1 108
Sydney, 1 6 36
Hamburg, 11 5 220
Ammonium Sulphate—
Venice, 82 t. 10 c. £88c
Artwerp, 9 15 2 q. 120
Charente, 133 3 3 1,396
Rouen, 4 13 51
Nantes, 10 3 1 108
Genoa, 10 8 1 216
Bordeaux, 20 10 218
Gd. Canary, 9 3 3 87
Demerara, 36 11 1 450
Madeira, 10 5
Hamburg, 83 2 1 920
Valencia, 388 5 4,133
Arseniate of Soda—
Lisbon, 4 cks.
Bleaching Powder—
Bombay, 5 css.
Havre, 12
Melbourne, 60 brls.
New York, 444 10 bxs.
Baltimore, 20
Boston, 540
Calcutta, 102
Cienfuegos, 4 cks.
Ghent, 169
Hamburg, 60
Iloilo, 1
Oporto, 4
Borax—
Rotterdam, 10 t. 12 c. 1 q. £316
Ibrail, 9 2 14
Matanxas, 5 c. 2 £8
Nantes, 1 1 30
Gothenburg, 8 2 12
Boracic Acid—
Havre, 2 t. 2 c. 1 q. £83
Rotterdam, 2 8 1 96
Brimstone—
Boston, 113 t. 2 c. £573
Copper Sulphate—
Rouen, 58 t. 18 c. £878
Gothenburg, 5 10 81
Naples, 2 14 2 q. 41
Messina, 14 15 200
Barcelona, 28 18 3 440
Bordeaux, 54 19 1 903
Genoa, 14 5 211
Rochelle, 9 19 148
Bombay, 5 76
Amsterdam, 1 2 3 17
Odessa, 2 2 30
Colombo, 2 18 1 44
Mersyne, 1 19
Monte Video, 1 10 22
Batoum, 1 11 23
Bordeaux, 242 5 3 3,647
Nantes, 36 3 2 585
Ghent, 7 1 2 97
Marseilles, 267 15 4,116
Calcium Chloride—
Bombay, 1 t. 19 c. £7
Caustic Potash—
Baltimore, 6 t. 7 c. £130
New York, 9 19 199
Hamburg, 7 8
Caustic Soda—
Alexandria, 100 dms.
Alicante, 20
Baltimore, 100 270 brls.
Barcelona, 70 240 cks.
Boston, 535
B. Ayres, 100
Havana, 80 20 kgs.
La Guayra, 30
Malaga, 36
Maracaibo, 10
Melbourne, 96 10 pks.
New York, 375
Philadelphia, 80
Rouen, 121
Samarang, 40
Tarragona, 30
Valencia, 80
Valparaiso, 25
Antwerp, 35
Calcutta, 38
Cape Town, 30
Ceara, 10
Genoa, 301
Havre, 18
Hiogo, 300
Maceio, 10
Maranham, 5
Naples, 35
Oporto, 30
Para, 8
Progresso, 50
RioGrande de Sul, 25
Rotterdam, 8
St. Johns, N'fld, 36
Santander, 18
Seville, 200
Valparaiso, 10 25
Chemicals *(otherwise u*
Odessa, 2 t. 2 c.
Alexandria, 3 t. 2 c.
Leghorn, 19
Genoa, 9
Bilbao, 6
Constantinople, 3
Naples, 18
Lisbon, 5
Hamburg, 2 13
Marseilles, 2 17
Copperas—
Syra, 9 t. 5 c.
Alexandretta, 3
Mollendo, 9
Volo, 4 13
Kurachee, 22 15
San Francisco, 44 10
Cobalt Oxide—
Gijon, 2 c.
Cream of Tartar—
Canada, 6 c.
Epsom Salts—
Alexandria, 5 t.
Naples, 2 cks.
Guano—
Malaga, 250 t.
Gypsum—
New York, 65 t. 5 c.
Barbadoes, 20 15
Magnesium Chloride—
Rouen, 20 t. 12 c.
Halifax, 3 18
Madras, 2
Manure—
Barcelona, 49 t. 19 c.
Malaga, 100
Rouen, 4 17
Valencia, 78 1
Las Palmas, 2
Gd. Canary, 4
Nantes, 100 t.
Bordeaux, 200 12
Nitre Cake—
Taltal, 2 t. 5 c.
Oxalic Acid—
Barcelona, 13 c.
Phosphorus—
Vera Cruz, 5 cs.
Shanghai, 10 5 c.
Monbercy, 2
Picric Acid Crystals—
New York, 50 css.
Potash—
Alexandria, 11 c.
Potassium Bichromat
Alexandretta, 1 t. 10 c.
Piræus, 8
Bombay, 17
Potassium Carbonate
Boston, 3 t. 10 c.
New York, 18 15
Potassium Chlorate—
Cienfuegos, 4 c.
Rotterdam, 1 t.
Copenhagen, 1
Gothenburg, 10
Hong Kong, 1 10
Odessa, 10
Palermo, 1 16
Progresso, 1 10
Calcutta, 1
Genoa, 1
Hiogo, 7 10
New York, 7 10
Philadelphia, 15
Bari, 10
Corunna, 1
Sydney, 6
Monterey, 3
Antwerp, 2
Boston, 5

Potassium Chromate—
Marseilles, 9 c. 3 q. £15

Potassium Prussiate—
Bombay, 2 c. £12
Naples, 10 84

Salammoniac—
Bombay, 8 t. 5 c £275
Naples, 19 5 q. 33
Messina, 12 3 21
Philadelphia, 4 6 2 38
Alexandria, 3 3 104
Trieste, 19 33

Salt—
Newcastle, 250 t.
Opobo, 10
Pensacola, 400
Philadelphia, 450
Rotterdam, 177
Sierra Leone, 100
Akassa, 400
Cameroons, 25
Para, 100
Abonnema, 37
Amsterdam, 130
Antwerp, 50
Baltimore, 250
Benin, 10
Boston, 125
Brisbane, 30
Demerara, 124
Galveston, 100
Hamburg, 70
Horton, 250
Kingston, Ja.., 5
Malta, 5
Melbourne, 215

Saltcake—
Baltimore, 98 t. 7 c. £262
Dunedin, 2 5

Saltpetre—
Maranham, 9 c. £15
Carthagena, 4 t. 2 q. 70
Cyprus, 12 2 14
Larnaca, 3 15 78
Pernambuco, 3 11 99
Manaos 4 2 5
Savanilla, 5 2 8

Sheep Dip—
B. Ayres, 2 t. 14 c. £67
Cape Town, 2 3 76
Punta Arenas, 3 8 3 q. 90
Monte Video, 3 71

Soap—
Akassa, 50 bxs.
Algoa Bay, 575
Barbadoes, 1,000
Bolama, 50
Bombay, 250 6 css.
Cameroons, 50
Canaria, 230
Cape Town, 2,550
Cette, 40
Congo, 10
Constantinople, 5
Demerara, 2,434
E. London, 1,500
Ferrol, 30
Genoa, 50
Gibraltar, 250
Gd. Canary, 276
Hamburg, 1
Kurachi, 500
La Guayra, 2
Landana, 30
Loanda, 50
Mandyi, 50
New York, 32
Pt. Elizabeth, 100
Pt. Natal, 1,380
St. John's, Nfld., 405 50 kgs.
Shanghai, 2,620
Teneriffe, 200
Winnebah, 120
Calcutta, 25 750 bdls.
Adelaide, 3 tanks.
Boston, 400
Colon, 1
Genoa, 10
Malta, 20 2 pks.
Nassau, 40
Quettah, 2
Rotterdam, 100
S Thomas, W.I., 400
Santa Cruz, Teneriffe, 2
Surinam, 105 bxs.

Soda Alkali—
Smyrna, 35 brls.

Soda Ash—
Boston, 2,120 bgs. 287 cks. 81 tcs.
B. Ayres, 321 brls.
Hamilton, 60
Havana, 3
Melbourne, 358
Montreal, 5
Philadelphia, 640 bgs. 509
Rio de Janeiro, 50 brls.
Sherbrooke, 96 bgs.
Baltimore, 200 91 93
Galveston, 30
Ghent, 11
Maranham, 80 brls. 50
New York, 66 94
New Orleans, 58
Oporto, 16
Syra, 50

Soda Crystals—
St. John's, N'fld., 30 kgs.
Samarang, 66 brls.
Valparaiso, 200
Malta, 100
New York, 56
Pt. Natal, 10
Singapore, 10 cks.

Sodium Bicarbonate—
Boston, 100 cks.
B. Ayres, 50 kgs. 57 50 bgs.
Genoa, 120
Hamilton, 25
Melbourne, 354
St. John's, N B., 50
Calcutta, 1,000
Cienfuegos, 25
Havana, 20 2
Newcastle, 40
Piræus, 3
Rotterdam, 25
St John's, N'fld, 20
Seville, 150 35 brls.
Sydney, 140
Valparaiso, 150

Sodium Bichromate—
Piræus, 19 c. £23
Calcutta, 4 t. 2 q. 5

Sodium Carbonate—
Boston, 84 brls.

Sodium Chlorate—
Genoa, 1 t 15 c. £118
Rotterdam, 1 59
New York, 5 296
Hamburg, 1 62

Sodium Nitrate—
Gd. Canary, 12 t. 3 c. 3 q. £115
Lisbon, 33 18 1 322
Carthagena, 1 9 13

Sodium Phosphate—
Pasages, 11 c. 3 q. £11

Sodium Silicate—
Malta, 10 cks.
Oporto, 5
Progresso, 5
Smyrna, 10
Vigo, 7
Volo, 10 brls.

Sodium Sulphate
Hamburg, 2 t. 2 c. £13

Sugar of Lead—
Matanzas, 2 c. 2 q. £5
Calcutta, 1 t. 8 44

Sulphur—
Rouen, 80 t. 13 c. £477
Kurachee, 6 36
Fredrikstad, 154 4 950
Oporto, 7 7 1 q. 68
St. John's, N'fld., 11 6

Sulphuric Acid—
Santos, 10 c. 2 q. £14

Superphosphates—
Valencia, 17 t. 12 c. £45

Vitriol—
Talcahuano, 15 c. £6

Zinc Chloride—
Bombay, 1 t. 10 c. 31 q. £13

Zinc Muriate—
Bombay, 7 t. 2 c. 2 q. £120

GLASGOW.

Week ending January 14th.

Ammonium Sulphate—
Demerara, 108 t. 10 c. £1,178
Bordeaux, 20 3½ 8 lbs. 210

Bleaching Powder—
Calcutta, 7 t. 9¾ c. £68

Caustic Soda—
Cape Colony, 3 t. 18¾ c. £119. 10s.
Jamaica, 14 10 167

Chemicals *(otherwise undescribed)*
Amsterdam, 1 ck. £2

Coal Tar—
Baltimore, 70½ t. £200

Coal Tar Pitch—
Oporto, 150¼ c. £180
Baltimore, 104 t. 2½ 180
Bruges, 640

Dyestuffs *(otherwise undescribed)*
Melbourne, £69

Dyestuffs—
Extracts
Lisbon, 10¾ c. £30
Logwood
Melbourne, 561¾ c. £320
Lisbon, 31 t. 250

Manure—
Antigua, £72

Painters' Colours—
Jamaica, 60½ c. £51
Trinidad, 42½ 37
Colombo, 5 t. 4 52

Paraffin Wax—
Rouen, 22 t. 2 c. £876
Bordeaux, 5 13¼ 226

Potassium Bichromate—
Genoa, 364¼ c. £615
Rouen, 138 165
Lisbon, 2 t. 5½ 180

Sheep Dip—
Melbourne, 28 c. £45

Soap—
Jamaica, 3½ t. £63
Barbadoes, 5 7 c. 100
Lisbon, 45 45
Cape Colony, 25 23
Antigua, 65¼ 45

Soda Ash—
Baltimore, 30 t. 12 c. £199
Philadelphia, 201 8 1,380

Sodium Bichromate—
Genoa, 733 c. £480

Superphosphates—
Genoa, 96 t. 11¼ c. £444

Tar—
Cape Colony, 1 t. 12¾ c. £22

HULL.

Week ending January 5th.

Alkali—
Leghorn, 16 cks.

Bleaching Powder—
Bombay, 200 drms.

Caustic Soda—
Antwerp, 1 drm.
Bergen, 4
Leghorn, 40
Libau, 65
Naples, 80
Riga, 308

Chemicals *(otherwise unaescribed)*
Amsterdam, 5 cks.
Bombay, 1 482
Bordeaux, 40 c.
Christiania 2
Constantinople 94
Dunkirk, 40
Gothenburg, 5 pks.
Genoa, 5
Hamburg, 15 57 cs.
Harlingen, 2
Kurachee, 40 250
Libau, 60
Marseilles, 3 25
New York, 59
Odessa, 116 10
Rotterdam, 343 css.
Rouen, 18
Reval, 75

Copper Sulphate—
Marseilles, 148 cks.

Cotton Seed Oil—
Antwerp, 245 c.
Bergen, 6
Copenhagen, 192
Gothenburg, 320
Hamburg, 647
Kurachee, 7
Marseilles, 400
Riga, 3
Rotterdam, 1,219

Dyestuffs *(otherwise undescribed)*
Antwerp, 2 css.
Bombay, 44 cks.

Linseed Oil—
Antwerp, 104 c.
Bergen, 27
Bombay, 134
Christiania, 41
Constantinople, 13
Copenhagen, 73
Hamburg, 17
Kurachee, 100

Manure—
Antwerp, 100 bgs.
Dunkirk, 500
Gothenburg, 90
Genoa, 599
Ghent, 833

Painters' Colours—
Antwerp, 27 cks.
Amsterdam, 1
Bombay, 19 18 pks. 20 cs.
Christiania, 10 12 dms.
Genoa, 12
Ghent, 23 1
Hamburg, 10 23 3
Naples, 1
Odessa, 175
Rotterdam, 11 1
Stettin, 10

Pitch—
Antwerp, 133 t.
Amsterdam, 75
Dunkirk, 120
Leghorn, 201
Naples, 102

Stearine—
Leghorn, 4 cks.

Sulphur—
Stettin, 5 t.

Tar—
Bombay, 51 cks.

Varnish—
Antwerp, 6 cks. 1 cs.
Amsterdam, 2
Bombay, 135 dms.
Copenhagen, 17

TYNE.

Week ending January 9th.

Alkali—
Gothenburg, 121 c.
Antwerp, 104

Ammonium Sulphate—
Genoa, 2,029 c.

Barytes Carbonate—
Rotterdam, 274 c.
Hamburg, 2,000
Rouen, 300

Bleaching Powder—
Gothenburg, 414 c.
Rotterdam, 56
Aarhuus, 304
Antwerp, 6
Rouen, 104

Caustic Soda—
Genoa, 250 c.
Rouen, 110
Hamburg, 23
Antwerp, 101

Litharge—
Copenhagen, 34 c.
Antwerp, 58

Magnesia—
Rouen, 6 c.

Potassium Chlorate—
Antwerp, 30 c.

Soda
Philadelphia, 3,501

Soda Ash—
Aalborg, 142 c.

Soda Crystals
Antwerp, 55 c.

Sulphur—
Antwerp, 200 c.
Rouen, 600

GOOLE.

Week ending December 30th.

Benzol—
Rotterdam, 20 cks.

Chemicals *(otherwise undescribed)*
Hamburg, 20 cks.

Coal Products—
Calais, 25 cks.
Rotterdam, 24

Dyestuffs *(otherwise undescribed)*
Boulogne, 1 ck. 40 dms.
Hamburg, 2

Manure—
Boulogne, 274 bgs.
Ostend, 562

GRIMSBY.

Week ending January 2nd.

Chemicals *(otherwise undescribed)*
Colon, 35 drs.
Dieppe, 12 cs. 129 pks. 100 btls.
Hamburg, 3 9 cks. 4
Rotterdam, 20 dms. 1 cs. 16 18

PRICES CURRENT. WEDNESDAY, JANUARY 20, 1891.

PREPARED BY HIGGINBOTTOM AND CO., 116, PORTLAND STREET, MANCHESTER.

The values stated are F.O.R. at maker's works, or at usual ports of shipment in U.K. The price in different localities may vary.

	£	s.	d.
Acids:—			
Acetic, 25 °/₀ and 40 °/₀ .. .. per cwt.	7/- & 11/-		
,, Glacial .. .. ,,	50/-		
Arsenic, S.G., 2000° .. .. ,,	0	13	6
Fluoric .. .. per lb.	0	0	3¾
Muriatic (Tower Salts), 30° Tw. .. .. .. per bottle	0	0	10
,, (Cylinder), 30° Tw. .. .. ,,	0	3	0
Nitric 80° Tw. .. .. per lb.	0	0	2¼
Nitrous .. .. ,,	0	0	1¾
Oxalic .. .. nett ,,	0	0	3⅛
Phosphoric, 1750° .. .. ,,	0	0	11½
Picric .. .. ,,	0	0	10¼
Sulphuric (fuming 50 °/₀) .. .. per ton	15	10	0
,, (monohydrate) .. .. ,,	5	10	0
,, (Pyrites, 168°) .. .. ,,	3	5	0
,, (,, 150°) .. .. ,,	1	5	0
,, (free from arsenic, 145°) .. .. .. ,,	1	7	6
Sulphurous (solution) .. .. ,,	2	15	0
Tannic (pure) .. .. per lb.	0	1	2
Tartaric .. .. ,,	0	1	1
Arsenic, white powdered .. .. nett per ton	11	0	0
Alum (loose lump) .. .. ,,	5	5	0
Alumina Sulphate (pure) .. .. ,,	5	0	0
,, ,, (medium qualities) .. .. .. ,,	4	15	0
Aluminium .. .. per lb.	2s. 8d. to	0	3 2
Ammonia, ·880=28° .. .. per lb.	0	0	3
,, =24° .. .. ,,	0	0	1¾
,, Carbonate .. .. nett ,,	0	0	3½
,, Muriate .. .. per ton	21	0	0
,, ,, (sal-ammoniac) 1st & 2nd .. per cwt.	35/- & 33/-		
,, Nitrate .. .. per ton	40	0	0
,, Phosphate .. .. per lb.	0	0	10½
,, Sulphate (grey), London .. .. .. per ton	10	12	6
,, ,, (grey), Hull .. .. ,,	10	12	6
Aniline Oil (pure) .. .. per lb.	0	0	8¾
Aniline Salt ,, ... ,,	0	0	7½
Antimony .. .. per ton	70	0	0
,, (tartar emetic) .. .. per lb.	0	1	0
,, (golden sulphide) .. .. ,,	0	0	10
Barium Chloride .. .. per ton	7	15	0
,, Carbonate (native) .. .. ,,	3	10	0
,, Sulphate (native levigated) .. .. .. ,,	45/- to	75/-	
Bleaching Powder, 35 % .. .. nett ,,	7	10	0
,, Liquor, 7 % .. .. ,,	2	10	0
Bisulphide of Carbon .. .. ,,	11	15	0
Chromium Acetate (crystal .. .. per lb.	0	0	6
Calcium Chloride .. .. per ton	2	5	0
China Clay (at Runcorn) in bulk .. .. .. ,,	17/6 to	35/-	
Coal Tar Dyes:—			
Alizarine (artificial) 20 % .. .. per lb.	0	0	8¾
Magenta .. .. ,,	0	3	9
Coal Tar Products			
Anthracene, 30 % A, f.o.b. London .. per unit per cwt.	0	1	2½
Benzol, 90 % nominal .. .. .. per gallon	0	2	2
,, 50/90 ,, ... ,,	0	1	10
Carbolic Acid (crystallised 40°) .. .. .. per lb.	0	0	5⅛
,, (crude 60°) .. .. per gallon	0	1	2
Creosote (ordinary) .. .. ,,	0	0	1¼
,, (filtered for Lucigen light) .. .. ,,	0	0	2½
Crude Naphtha 30 % @ 120° C. .. .. .. ,,	0	1	1
Grease Oils, 22° Tw. .. .. per ton	2	5	0
Pitch, f.o.b. Liverpool or Garston .. .. .. ,,	1	14	0
Solvent Naphtha, 90 % at 160° .. .. .. per gallon	0	1	2
Coke-oven Oils (crude) .. .. ,,	0	0	3
Copper .. .. per ton	45	15	0
,, Sulphate .. .. ,,	14	15	0
,, Oxide (copper scales) .. .. ,,	45	0	0
Glycerine (crude) .. .. ,,	15	0	0
,, (distilled S.G. 1250°) .. .. ,,	50	0	0
Iodine .. .. nett, per oz.	0	0	9
Iron Sulphate (copperas) .. .. per ton	1	12	6
,, Sulphide (antimony slag) .. .. ,,	2	0	0
Lead (sheet) for cash .. .. ,,	12	12	6
,, Litharge Flake (ex ship) .. .. ,,	15	0	0
,, Acetate (white ,,) .. .. ,,	26	10	0
,, ,, (brown ,,) .. .. ,,	18	10	0
,, *Carbonate* (white lead) pure .. .. .. ,,	20	0	0
,, *Nitrate* .. .. ,,	20	10	0
Lime, Acetate (brown) .. .. per ton	7	0	0
,, ,, (grey) .. .. ,,	10	5	0
Magnesium (ribbon and wire) .. .. per oz.	0	2	3
,, Chloride (ex ship) .. .. per ton	2	7	6
,, Carbonate .. .. per cwt.	1	17	6
,, Hydrate .. .. per ton.	17	0	0
,, Sulphate (Epsom Salts) .. .. .. per ton	3	0	0
Manganese, Sulphate .. .. ,,	17	0	0
,, Borate .. .. per cwt.	2	15	0
,, Ore, 70 % .. .. per ton	4	5	0
Methylated Spirit, 61° O.P. .. .. per gallon	0	2	6
Naphtha (Wood), Solvent .. .. ,,	0	4	6
,, ,, Miscible, 60° O.P. .. .. .. ,,	0	5	0
Oils:—			
Cotton-seed .. .. per ton	19	10	0
Linseed .. .. ,,	20	0	0
Lubricating, Scotch, 890°—895° .. .. .. ,,	7	5	0
Petroleum, Russian .. .. per gallon	0	0	4½
,, American .. .. ,,	0	0	5½
Potassium (metal) .. .. per oz.	0	3	7
,, Bichromate .. .. per lb.	0	0	3¾
,, Carbonate, 90% (ex ship) .. .. .. per ton	19	0	0
,, Chlorate .. .. per lb.	0	0	5¾
,, Cyanide, 98% .. .. ,,	0	2	3
,, Hydrate (Caustic Potash) 80/85 % .. per ton	22	15	0
,, ,, (Caustic Potash) 75/80 % .. ,,	21	5	0
,, ,, (Caustic Potash) 70/75 % .. ,,	20	15	0
,, Nitrate (refined) .. .. per cwt.	1	2	6
,, Permanganate .. .. per cwt.	3	5	0
,, Prussiate Yellow .. .. per lb.	0	0	10¼
,, Sulphate, 90 % (ex ship) .. .. .. per ton	9	15	0
,, Muriate, 80 % (do.) .. .. .. ,,	7	17	6
Silver (metal) .. .. per oz.	0	3	6¾
,, Nitrate .. .. ,,	0	2	10
Sodium (metal) .. .. per lb.	0	4	0
,, Carb. (refined Soda-ash) 48 % .. nett per ton	6	5	0
,, ,, (Caustic Soda-ash) 48 % . ,, ,,	5	5	0
,, ,, (Carb. Soda-ash) 48% .. .. ,, ,,	5	7	6
,, ,, (Carb. Soda-ash) 58 % .. .. ,, ,,	6	7	6
,, ,, (Soda Crystals) .. .. .. ,, ,,	3	9	0
,, Acetate (ex-ship) .. .. ,,	18	0	0
,, Arseniate, 45 % .. .. ,,	10	15	0
,, Chlorate .. .. per lb.	0	0	7
,, Borate (Borax) .. .. nett, per ton.	28	10	0
,, Bichromate .. .. per lb.	0	0	2¾
,, Hydrate (77 % Caustic Soda) (f.o.b.) nett pr. ton (10 ton lots)	11	5	0
,, ,, (74 % Caustic Soda) ,, ,, ,, (10 ton lots)	11	5	0
,, ,, (70 % Caustic Soda) ,, ,, ,, (10 ton lots)	10	5	0
,, ,, (60 % Caustic Soda) .. ,, ,, (10 ton lots)	9	2	6
,, ,, (60 % Caustic Soda, cream) (f.o.b.) ,, (10 ton lots)	8	17	6
,, Bicarbonate .. .. ,,	6	15	0
,, Hyposulphite .. .. ,,	7	15	0
,, Manganate, 25% .. .. ,,	9	0	0
,, Nitrate (95 %) ex-ship Liverpool .. .. per cwt.	0	9	4½
,, Nitrite, 98 % .. .. per ton	30	0	0
,, Phosphate .. .. ,,	15	10	0
,, Prussiate .. .. per lb.	0	0	8
,, Silicate (glass) .. .. per ton	5	7	6
,, ,, (liquid, 100° Tw.) .. .. ,,	4	7	6
,, Stannate, 40 % .. .. per cwt.	3	5	0
,, Sulphate (Salt-cake) .. .. per ton.	1	17	6
,, ,, (Glauber's Salts) .. .. ,,	1	15	6
,, Sulphide .. .. ,,	7	15	0
,, Sulphite .. .. ,,	6	12	6
Strontium Hydrate, 100% .. .. ,,	8	10	0
Sulphocyanide Ammonium, 95 % .. .. per lb.	0	0	7½
,, Barium, 95 % .. .. ,,	0	0	5
,, Potassium .. .. ,,	0	0	8
Sulphur (Flowers) .. .. per ton.	10	0	0
,, (Roll Brimstone) .. .. ,,	8	0	0
,, Brimstone: Best Quality (nominal) .. ,,	6	10	0
Superphosphate of Lime (26 %) .. .. ,,	2	7	6
Tallow .. .. ,,	26	10	0
Tin (English Ingots) .. .. ,,	94	0	0
,, Crystals .. .. per lb.	0	0	6¾
Zinc (Spelter) .. .. per ton	22	7	6
,, Chloride (solution, 96° Tw.) .. .. .. ,,	6	15	0

selected list, from which to form special juries when necessary; this proposition being the outcome of the expressed disbelief in the qualifications of special juries during recent years.

So far, so good, provided metropolitan suitors have sufficient money and leisure time to follow their cases through. But, unfortunately, provincial suitors are not even mentioned, and these are the very ones who stand in most need of assistance. Again, although stating at the outset that the Guildhall sittings are wholly inadequate, and advocating the discontinuance of juries, at the same time pointing out that, as it is, all cases without juries are tried at the Royal Courts, still it is not considered desirable to discontinue the Guildhall sittings; and this after distinctly stating that were a commercial tribunal to sit constantly, and a special Bar to arise, practising solely at the Guildhall, it would be impossible for solicitors having cases to attend at both places to do their duty to their clients.

At all events some of the satirical suggestions in the matter of reform, which have found their way into the daily press from various quarters, seem to have produced a change, if nothing else has been successful, for there has been a marked improvement in the punctual commencement of business since the meeting of the judges last week.

Yet, after all, though desirous of seeing commercial litigation conducted in a more business-like fashion, we would again reiterate the opinion that it is an open question whether arbitration, which has been such a successful rival to the business of the Courts of Law, is not in the end the most suitable means of deciding the generality of commercial differences, in which case there would seldom be any need for manufacturers and others to begin a legal process, unless the point at issue was of sufficient importance to warrant the expenditure of the time and money which such proceedings must always involve.

Correspondence.

*** We do not hold ourselves responsible for the opinions expressed by our correspondents.*

ANSWERS TO CORRESPONDENTS.

H.B.Y.B.—We are of the opinion that cyanogen will be cheaper in the future. A glance at the Patent List given in our columns will show you that several patents have lately been taken out in connection with the more economic production of cyanogen, and its recovery from gas, &c.

SULPHUR.—(1) The imports of brimstone at London and Liverpool, &c., are given every week in our Import Lists, so that an accurate estimation of the amount imported annually, can be readily made by totalling the weekly returns. (2) Usually about 5%. (3) We have no data in connection with the matter, and therefore, cannot say.

T.A.W.—The first Wednesday in each month.

W.E.H.—Thanks for your letter.

J.G.D. (Dublin)—The answer to your query has been forwarded you by post.

L.P.—We are sorry we could not give you any further information at present, but hope to be able to do so at a later period.

GYPUM.—180° C. usually. Why not use the fusion method? It is speedier and thoroughly reliable.

A SUBSCRIBER.—You should have been successful with ammonia, but of course whatever you try you can hardly expect to stain the wood right through. You might, however, try the following: Boil 1 lb. of logwood in 4 quarts of water, add a handful of walnut shells, boil up again, remove the chips, add a pint of vinegar, and apply hot. When dry a solution of ferrous sulphate (1 oz. in a quart of water) is applied hot over the first stain.

GOLD PLATED VITRIOL RETORTS.

(To the Editor of the Chemical Trade Journal.)

SIR,—I observe that according to a paragraph on page 81 of your last issue, a German patent has been issued for gold plated copper vitriol retorts. As it is generally assumed that when a German patent has been issued, there can be no question of novelty or patentability, may I be permitted to refer those of your readers who are interested in the matter, to Phillip's "Elements of Metallurgy," edition of 1874, page 739, and to remark that the mere substitution of an analogous material does not, here or in Germany, constitute subject matter for a patent.—Yours, obediently,

WILLIAM E. HEYS.

Manchester, 23rd January, 1892.

Market Reports.

TAR AND AMMONIA PRODUCTS.

Benzol has a steadier aspect, and this with only a small doing. 90's are fetching 2s. 3d., and 50-90's 1s. 9d., these beir sidered the minimum values. Carbolic acid is going from worse, and the future of this industry is causing extreme anxiety producers. Pitch remains in excellent demand. The state anthracene market remains very unsatisfactory, prices are still 1: 30% A, and 9d. for 30% B. Most producers are holding higher prices, but there is not the slightest prospect of business as buyers are determined to hold back.

The sulphate of ammonia market is slightly easier, although values and forward quotations are well maintained. Some att evidently being made by the dealers to force prices back recent level, but this will not be an easy task now, as there is little offering. Hull and Liverpool deliveries are held for £10s. Leith business has been done at £10. 11s. 3d., while London quoted as £10. 12s. 6d. Nitrate is steadier at 9s. 7½d.

THE LIVERPOOL OIL MARKET.

LIVERPOOL, WEDNE

OILS: Palm oil remains dull. There have been sales of I £21. 15s., and New Calabar £20. 12s. 6d., both transit, but is restricted, to-day's prices being £21. 10s. transit, and £21. quay for Lagos. Olive experienced a slight rise early in the w to-day prices have returned to their former position, with Ne and Candia at £38,. £36. 10s., to £37. 10s. for Messina, a for Corfu. Linseed has a moderate demand, and is still q 19s. 6d. to 20s. 6d. per cwt, in export casks. Cottonseed has maintain the steady tone of last week, and has declined to 18s. cwt for Liverpool refined, and 19s. 6d. per cwt. for American. oil is slow of sale but steady, with good seconds, Calcutta 2¾ pressure, French 2$\frac{13}{16}$d. to 2$\frac{7}{8}$d. per lb. Tallow has been fi continues so with a fair business passing, prices being ur Resin: Common is still steady at 4s. 6d. the cwt., while highe continue to command full prices. The improvement in s turpentine has been sustained, and there is fair business doing per cwt. American petroleum and Russian refined are unalte

THE LIVERPOOL MINERAL MARKET

The market has continued to rule steady during the week ganese: There are no arrivals to report. Prices continue fir an upward tendency. Borate, 6¼d. per lb.; sulphate, £2 oxalate, 1s. 6d. per lb.; chloride, £15.; carbonate, £1 steady. Magnesite: Raw lump very quiet, without alteratio ground, £6. 10s., and calcined, £12. 10s. Bauxite (Irish Hi in brisk demand at full prices; lump, 20s.; seconds, 16s.; an 12s. French chalk: Arrivals this week have been small, steady business doing at full prices, especially for G.C.B. White" brand; silvery, 90s. to 92s. 6d.; prime quality, 90s. superfine, 105s. Barytes—Carbonate: Prime lump still sc account of the weather, being quoted 90s. to 95s.; nuts, 70s. whilst finest white sulphate is steady. "Angel White," No. No. 2, 60s. to 65s.; No. 3, 45s. Pumice-stone steady. Iron Manganiferous, Santander, Bilbao, Irish, and Cumberland Emerystone has continued very steady; No. 1 lump £5. 10s. smalls £5. to £5. 10s. Fullers' earth quiet; best lump, 5 impalpable ground, £7.; "Emerald" ground, 80s. Scheel fram, tungstate of soda, and tungsten metal in good demand firm. Chrome ore: Inquired for, both for spot and forward of high-class qualities. Antimony ore and metal have beer Asbestos very firm. Potter's lead ore of best quality steady £12. 10s. to £13. 15s.; selected lump, £14. 10s. to £ Calamine quiet. Strontia sulphate (celestine) continues ve Limespar unchanged, especially for English manufactured, old brand in demand at 50s. (ground). Felspar unchanged. Fl Best quality scarce. Ferro manganese firmer, 75%, £12.; 85 15s. Plumbago brisk: Spanish, £5.; best Ceylon lump quotations; Italian and Bohemian, £4. to £12. per ton. "Fa £5. to £6.; Blackwell's "Mineraline," £10. French sand 22s. 6d. Ground mica, £45. to £50. China clay steady; 18s. 6d.; good medium, 22s. 6d. to 25s.; best, 30s. to Runcorn). Bog ore (oxide of iron) steady; finest quality, 22s.

REPORT ON MANURE MATERIAL.

Business in nitrogenous material continues fairly active, but in phosphates sellers find it difficult to make headway even at a slight concession in prices.

High grade Florida phosphate, 75/80%, offers freely at 9½d. per unit, in cargoes c.i.f. to U.K. or continent, and a ¼, possibly ⅓, less might perhaps be accepted to effect sales in large lines. Quotations for Florida River Rock and for Charleston remain at about 9½d. per unit. We do not hear of any important business passing in continental descriptions and quotations remain unaltered.

River Plate cargoes of bones are neglected, and values of cargoes afloat must therefore be quoted nominally £4. 6s. 3d. to £4. 7s. 6d. For forward shipment there are buyers at £4. 5s., but so far no sellers. East India crushed bones and bone meal seem a shade easier. For crushed bones £4. 8s. 9d. to £4. 11s. 3d. per ton, according to description, would be accepted for shipment. For Bombay bone meal, for shipment, £4. 12s. 6d. asked, but something less would no doubt be accepted. On spot there are sellers at £4. 12s. 6d. to £4. 15s. per ton, quay and store.

Nitrate of soda remains very firm at 9s. 6d. to 9s. 7½d. per cwt. on spot. Due cargoes cannot now be had under 9s. 7½d. per cwt., and for November shipments 9s. 7½d, to 9s. 9d., according to size and test required, U.K. or continent.

Dried Blood is still enquired for, and 9s. 6d. to 9s. 9d. per unit of ammonia per ton, f.o.r. at works, nearest value for home prepared. Kainit enquired for, and 45s. per ton, on spot, is about value, in bags, delivered free to rails. Superphosphates are firm, and 45s. per ton, in bulk, f.o.r. at works, is the quotation for 26%.

THE METAL MARKETS.

LONDON, WEDNESDAY.—Pig iron quiet; Scotch warrants closed at 43s. cash. Middlesbrough 36s. 5d. cash, and Hematite 46s. 6d. cash. Copper steady; Chili bars, G.O.B.'s and G.M.B.'s closed at £44. 12s. 6d. cash, and £45. 3s. 9d. to £45. 11s. 3d. three months. Tin dull; Straits closed at £89. 15s. 0d. to £90. 5s. 0d. cash, and £90. 0s. 0d. to £90. 10s. 0d. three months. Australian, £89. 17s. 6d. cash; English ingots, £93. 10s. Lead flat: Spanish, £10. 17s. 6d.; English, £11. to £11. 5s. 0d. Silesian spelter, ordinary, £22. 5s. 0d. Quicksilver dull: First hands, £7. 7s. 6d., second hands, £7. 5s. Copper shares steady: Cape 1¾ to 1⅞; Copiapo 2 7/16 to 2 5/16; Libiola 2⅞ to 3; Mason and Barry 4 11/16 to 4 15/16; Rio Tinto 17 7/16 to 17 9/16; Tharsis 5⅝ to 5⅜; Namaqua 1⅜ to 1⅝; Panulcillo ⅞ to 1.

GLASGOW, WEDNESDAY.—Market flat, with good business. No Scotch done; closing with buyers at 43s. cash, sellers ask 43s. 3d. Middlesbrough done at 36s. 6d. and 36s. 5d. cash, also at 36s. 8½d. and 36s. 8d. one month; closing with buyers at 36s. 4½d. cash, sellers ask 36s. 5d. Hematite done at 46s. 8d., 46s. 6½d., and 46s. 7d. cash, also at 46s. 9½d., 46s. 8½d., and 46s. 10d. one month; closing with buyers at 46s. 6½d. cash, sellers ask 46s. 7d.

MISCELLANEOUS CHEMICAL MARKET.

A fairly steady business continues to be done all round in Alkalies. There are no changes to report in spot prices, which are as follows, viz.:77% 20b. Tyne, £11 5s.; and f.o.b. Liverpool, 74% £11 5s.; 70% £10 5s.; 60% £9 2s. 6d. Cream, 60% £8 17s. 6d. In soda ash quotations from 1 1/16d. to 1 3/16d. per degree, cover all grades of quality f.o.b. Bleaching powder continues to hold a steady position, price being firm at £7 10s. nett per ton f.o.r.; and £7 5s. per ton for contracts over the entire year. The principal alteration in the market during the past week has been an advance in price of Chlorate of Potash from 5 5/16d. to 5¾d. per lb., with a strong demand for the article. Chlorate of soda, 7d. per lb. Recovered sulphur still scarce, and ruling at £6 5s. to £6 10s. for near delivery. Muriatic and sulphuric acids are firm in price, and continue in good demand. Sulphate of copper without change. White powdered arsenic firmer at £11 to £11 5s. nett per ton for spot delivery. Acetates of lime are easier for prompt delivery at £6 17s. 6d. and £10 per ton respectively, for brown and grey. Acetate of lead and other lead salts continue dull. Nitrate of soda rather firmer at 9s. 4½d. to 9s. 6d. a cwt. Demand still continues good for potash, caustic and carbonate, and prices continue fairly steady. General demand for finer chemicals is reported quiet from all quarters.

TYNE CHEMICAL REPORT.

TUESDAY.

Chemicals are steady, and more business is transpiring in bleaching powder and soda at full prices. Caustic soda is also being more freely sold at Union prices. Bleaching powder, softs, £7. 10s. per ton, hards £7. 15s. per ton; caustic soda, 77% £11. 10s. per ton, 70% £10. 5s. per ton; recovered sulphur, in 2 cwt. bags, £6. 10s. per ton; soda ash, 48% £5. 8s. 9d. per ton, 52% £5. 17s. 9d. per ton, 56% £6. 6s. 9d. per ton; alkali, 36% £4. 18s. 6d. per ton; white alkali, 48% £6. 10s. per ton, 50% £6 15s. 6d. per ton, 52% £7. per ton; hyposulphite of soda, £7. per ton in 7-5 cwt. casks, £7. 10s. per ton in 1 cwt. kegs in 10 ton lots; silicate of soda, 75° Tw. £2 13s. 6d. per ton, 100° Tw. £3. 13s. per ton, 140° Tw. £4. 2s. 6d. per ton; soda crystals, in casks, £3. 3s. 6d. per ton gross weight, in 2 cwt. bags £3. 3s. 6d. per ton net weight, on rails, £3. 1s. 3d. per ton; chlorate of potash, 5¾d. per lb. less 6%; pearl hardening, £3. 10s. per ton; pure white sulphate of alumina, £4. 10s. per ton; blanc fixe, £7. 10s. per ton; chloride of barium, £7. 10s. per ton; nitrate of baryta crystals, £17. per ton; nitrate of baryta, ground, £17. 10s. per ton; sulphide of barium, £7. per ton; carbonate of alumina, £28. 10s. per ton; aluminate of soda, £33. 10s. per ton; hydrate of barium, £11. per ton.

South Durham salt quiet, at 9s. f.o.b. Tees.

Durham miners' wages: The ballot papers issued by their leaders to the miners, upon this question, have not met with approval, and many large collieries have decided to return the papers unsigned. The paper asks the men to say whether they will accept 10% reduction—accept arbitration, or leave the board full power to settle—the objection being, that, the men are not given an opportunity of voting against any reduction whatever.

Coals are quiet. Northumbrian steam, dull at 10s. to 10s. 3d. per ton f.o.b.; best Durham gas, steady, at 9s. to 9s. 6d. per ton f.o.b.; manufacturing and Bunker coals, quiet, prices unchanged. Coke, firm at from 16s. to 16s. 6d. per ton f.o.b.

WEST OF SCOTLAND CHEMICALS.

GLASGOW, TUESDAY.

The principal subject of interest since last writing has been the crisis' which has overtaken the Scotch mineral oil industry. Agreement with the American producers of scale and wax, now for several years maintained, was seriously threatened, together with the combination amongst the Scotch companies themselves for the upholding of burning oil values, but it is believed that these disasters have been averted, although particulars are not yet known. The position, however, is sufficiently grave without that. One company broke down utterly last month, and this week another is issuing circulars to shareholders and creditors. A third company, which formerly paid high dividends, has just reported a loss on the year's operations. With the exception of a slight improvement in lighter gravity lubricants, there is no change in product values, nor is it likely that the new agreement as to scale and wax (comes in force April 1) will show any fall.

Sulphate of ammonia, of which 364 tons were shipped out of Leith last week, has been pretty steady £10. 10s. for spot, with some doings for March delivery at £10. 15s., so that the position is improved if anything.

In general chemicals there is still a lack of movement, but no fall in price.

Chief prices current are:—Soda crystals £3. 2s. 6d., nett Tyne; alum in lump, £5. 10s., nett Glasgow; soda ash, 1⅜d., less 1½%, Tyne; caustic soda, white, 74°, £11. 5s., 70/72°, £10. 5s., 60/62°, £9. 2s. 6d., and cream 60/62°, £8. 17s. 6d., all nett Liverpool; bicarbonate of soda, 5 cwt. casks, £6. 15s., and 1 cwt. casks, £7. nett Tyne; refined alkali, 1⅝d., less 5% Tyne; bleaching powder, £7. 7s. 6d. nett Tyne; saltcake, 37s. 6d.; borax, English, refined, £29. 10s., and boracic acid, £37. 10s., nett Glasgow; bichromate of potash, 3¾d., less 10% for Scotch and English deliveries (for export 3½d., less 10% f.o.b. Glasgow); bichromate of soda, 2¾d., less 10% for Scotch and English deliveries (for export 2½d., less 10% f.o.b. Glasgow); chlorate of potash, 5⅜d., less 5 % any port; nitrate of soda, 9s. 6d.; sulphate of ammonia, £10. 10s., f.o.b. Leith; salammoniac, first and second white, £35. and £33., less 2½% any port; sulphate of copper, £15. less 5% Liverpool; paraffin scale (hard), 2 1/16d., and soft 2 1/16d. to 3d. per lb.; paraffin wax, 120°, semi-refined, 3⅝d. to 4d.; paraffin spirit (naphtha), 7d. a gallon; paraffin oil (burning) 5d., 5¼d. and 5½d. according to kind, at works for Scotch buyers (English sales about 1d. lower); ditto (lubricating), 865°, £4. to £4. 5s., 885°, £5. 5s. to £7., and 890/895°, £6. to £8. Week's imports of raw sugar at Greenock were 19,744 bags.

The Patent List.

This list is compiled from Official sources in the Manchester Technical Laboratory, under the immediate supervision of George E. Davis and Alfred R. Davis, who report professionally upon the value of Chemical Patents.

APPLICATIONS FOR LETTERS PATENT.

Improvements in the Manufacture of Gas. G. M. S. Wilson. 535. Jan. 11.
Improvements in or connected with Thermometers. J. Arnold. 538. January 11.
A Solder for Aluminium. A. Rader. 540. January 11.
Improvements in Oil Extracting Apparatus. L. Roumieu. 541. Jan. 11.
Artificial Leather. J. Menke. 544. January 11.
Ore Pulverizers. J. Tregoning. 556. January 11.
Preventing Incrustation in Steam Boilers. E. Pollacsek. 558. Jan. 11.
Aluminium and Aluminium Alloys. G. Pickhardt. 581. January 12.
Removing and Preventing Incrustation in Boilers and Preventing Oxidization of Metals. J. Draper. 607. January 12.
Apparatus for Manufacture of Concentrated Nitric Acid. F. Valentiner. 610. January 12.
Preventing Oxidation in Steam Boilers. P. Decker. 636. January 12.
Coal Washing Apparatus. J. Smethurst and R. H. Edmundson. 666. January 13.
Machinery for Rolling Glass. B. J. Brearley and F. T. Brearley. 697. January 13.
Improvements in the Manufacture of Glue. A. J. Boult. 69
Washing Apparatus for use in the Manufacture of Paper. 709. January 13.
Process for the Manufacture of Cyanides of Sodium and J. R. Thame. 714. January 13.
Heating and Drying Apparatus. A. Harris. 734. January 14
Drying Chamber for Slurry or Cement, &c. T. J. Davey. 7
Steam Turbines. H. W. Houlden. 742. January 14.
Improvements in Water Gas Furnaces. S. Fox. 765. Janu
The Recovery of Ammonia Acetate in the Manufacture of W. Smith. 790. January 14.
Apparatus for Purifying and Filtering Oils, &c. J. Pelat.
Manufacture of Dyes of the Rosaniline Series. J. Y. Johnson.
Petroleum and other Hydro-Carbon Motors. J. F. Rankin a 826. January 15.
Improvements in Gas Producers and other Furnaces. J. January 15.
Gas Governors. A. M. Strathern and A. G. Strathern. 836. Ja
A Substitute for Tannin. S. Thorn. 838. January 15.
Charging Gas Retorts. J. Ruscoe. 864. January 15.
Manufacture of the Cyanides. G. T. Beilby. 878. January
Process and Apparatus for Obtaining Cyanides. G. T. January 16.
Joints for Metal Pipes. A. C. Wilson and C. T Johnson. 901.
Joints for Stoneware and Earthenware Pipes. C. T. John Wilson. 907. January 16.
Improvements in Hydro-Carbon Burners. F. J. B. Allen.
An Improved Blacking. A. W. Harrison. 910. January 16.
Apparatus for Coating, &c. Tin and Terne Plates. J. Abbott.
Smoke Washing Apparatus. W. B. Hartridge. 927. January

IMPORTS OF CHEMICAL PRODUCTS

AT

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending January 18th.

Acetic Acid—
Holland, 250 pks. A. & M. Zimmermann

Acetate of Lime—
U.S., 370 pks. Johnson, Hooper & Co.

Alkali—
France, 120 c. Arnati & Harrison

Alum—
Holland, 100 pks. Ohlenschlager Bros.

Ammonium Nitrate—
Holland, 5 pks. J. Owen

Barytes—
Germany, 24 cks. O'Hara & Hoar
Belgium, 22 A. Zumbeck & Co.
Holland, 66 D. Storer & Sons Ld.
Germany, 29 T. T. Creed
" 19 S. H. Willoughby
" 74 D. Storer & Sons Ld.
Holland, 22 Brougham & Young

Barium Chloride—
Germany, 12 pks. Petri Bros.

Borax—
Germany, 40 pks. F. Stahlschmidt & Co.

Brimstone—
Italy, *6 t. E. & E. Arbib

Caoutchouc—
Zanzibar, 6 c. Clarke & Smith
" 16 L. & I. D. Jt. Co.
Morambique, 20 Lewis & Peat
Havre, 104 H. Grey, jun.
Uruguay, 37 Prop. Bull Wf.
" 51 " "
" 95 A. Frey & Co.
" 22 Gellatly, Hankey & Co.
Singapore, 104 J. Ward & Son
Germany, 14 Tingle, Jacobs & Sons
Madagascar, 419 L. & I. D. Jt. Co.
" 86 Koebel & Co.
Penang, 27 Prop. Bull Wf.

Caustic Potash—
Germany, 10 c. J. Barber & Co.

Caustic Soda—
N. Russia, 5 c. Bessler, Waechter & Co.

Chemicals *(otherwise undescribed)*
Germany, £20 Domeier & Co.
" 10 pks. W. Burton & Sons
" 1 Phillips & Graves
U. S., £8 J. Watson & Co.
Holland, £10 Barr, Moering & Co.
" 30 pks. Beresford & Co.
France, £9 White & Co.
Germany, 10 pks. Craven & Co.
" 32 T. H. Lee
" 22 A. & M. Zimmermann
" 8 T. H. Lee

Copper Pyrites—
Spain, 2630 t. Tennant, Sons & Co.

Cream of Tartar—
France, 5 pks. B. & F. Wf. Co.
Italy, 72 Thames S. T. & L. Co
France, 10 W. C. Bacon & Co.
Holland, 20 Middleton & Co.
France, 7 Smith, Abbott & Co
Italy, 3 E. & E. Arbib

Dyestuffs—

Alizarine
Holland, 15 pks. Gellatly, Hankey & Co.

Cochineal
Belgium, 20 pks. Johnson, Hicks & Co.

Cutch
Singapore, 80 pks. J. Sunther & Son Ld.

Extracts
France, 200 pks. L. J. Levinstein & Son
" 1 Herm, Peron & Co.
Denmark, 2 Bailey & Leetham
France, 5 J. H. & G. Scovell
" 121 Allan, Bros. & Co
Belgium, 50 Leach & Co.

Gambier
Singapore, 211 pks. Anderson, Weber & Smith
" 1827 Adamson, Gilfillan, & Co.
" 1080 E. Boustead & Co.
E. Indies, 124 Brinkmann & Co.
" 84 J. Swire & Son
" 420 E. Boustead & Co.
Singapore, 84 G. Ward & Son
" 332 Beresford & Co.
" 439 Brinkmann & Co.

Indigo
E. Indies, 11 chts. F. Huth & Co.
" 18 Begg, Dunlop & Co.
" 42 Parsons & Keith
" 248 Stansbury & Co.
" 10 L. Achara & Co.
" 91 T. Barlow & Bros.
" 180 Patry & Pasteur
" 58 Wrightson & Son
" 4 J. Forsey
Sweden, 1 Phillipps & Graves
Italy, 1 L. & I. D. Jt. Co.
E. Indies, 43 Elkan & Co.
" 36 H. J. Perlbach & Co.
" 42 Parsons & Keith
" 436 L. & I. D. Jt. Co.
" 8 Arnati & Harrison
" 31 G. Ward & Son

Myrabolams
E. Indies, 1362 pks. Hoare, Wilson & Co.

Sumac
Italy, 600 pks. Bevington & Son
" 500 Brown & Elmslie
" 500 W. Shelcott

Tanners' Bark
Natal, 27 t. Hicks, Nash & Co.
Belgium, 45 Oastler, Palmer & Co.

Valonia
A. Turkey, 37 t. M. D. Co.
" 0 Beresford & Co.
" 26 W. G. Jacobs
" 96 J. Graves
France, 23 "
Greece, 32 "

Farina—
Holland, 20 pks. Dutrulle, Solomons & Co.

Glucose—
France, 500 pks. 500 c. J. Barber & Co.
" 250 1320 L. Sutro & Co.
" 50 300 Bot. & Nichs. Whvs.
" 500 500 J. Forsey
" 50 300 Page, Son & East
" 50 275 H. Johnson & Son
France, 100 100 Barrett, Tagant & Co.
" 100 100 Dutrulle, Solomons & Co.
U. S., 1100 1100 L. & I. D. Jt. Co.
" 943 2443 R. G. Hall & Co.

Manganese—
N. Zealand, 166 t. W. A. Sparrow

Manganese Sulphate—
Germany, 3 pks. D. Storer & Son

Manure—
E. Indies, 12 t. W. H. Carey & Sons
Germany, 20 Odams Chem. Mnre. Co.
" 275 F. W. Berk & Co.

Naphtha—
Belgium, 15 drs. Stein Bros.
Holland, 1 J. Owen
" 100 pks. Lister & Biggs
Belgium, 9 drs. W. G. Blagden
" 5 Lister & Biggs

Ochre—
Holland, 1 ck. Phillipps & Graves

Painters' Colours—
Germany, 8 pks. L. & I. D. Jt. Co.
" 3 H. J. Lenne & Co.
France, 32 Flageollet & Co.
" 1 Bennett S. S. Co.
Germany, 13 Phillipps & Graves
U. S., 16 css. J. Watson & Co.
" 25 pks. Nunn & Co.
Germany, 12 T. H. Lee
" 88 Craven & Co.
Holland, 3 G. Rahn & Co.
" 9 Phillipps & Graves
U. S., 4 Pickford & Co.
Germany, 8 L. & I. D. Jt. Co.

Paraffin Wax—
U. S., 93 brls.
" 4164 J. H

Pearl Ashes—
France, 250 c.
" 65 F.

Phosphate Rock—
France, 175 t. Law
Belgium, 240 Odam
" 155 Schofiel
" 100 Sheppy C
Holland, 100 Law

Plumbago—
Belgium, 27 css. Arn
Germany, 90 cks.
" 170 css. P

Potassium Carbonat
France, 100 c. F

Potassium Hydrate-
France, 4 pks. Sp

Potassium Muriate—
Germany, 152 pks. Be

Potassium Sulphate-
Germany, 100 bgs. T
" 508 pks.

Quicksilver—
N. Russia, 240 btls. L.
Italy, 150 flasks

Saltpetre—
Germany, 118 cks. P
" 8
" 20 Ba

Soda Ashes—
Holland, 1000 c.

Sodium Acetate—
France, 19 pks. S.

Sodium Chlorate—
France, 100 pks.

Sodium Hyposulphit
Holland, 114 pks.

Ultramarine—
Holland, 22 cs. Hern
Belgium, 8 cks. W.
Holland, 6 Haeffner
Germany, 10 css. Phi

Verdigris—
France, 6 pks. H. &

White Lead
Germany, 40 cks.
" 25
" 120 C
Holland, 14
" 140
Germany, 18
Holland, 16
France, 19

Zinc Oxide—
U. S., 250 brls.
Holland, 380

LIVERPOOL.

Week ending January 21st.

Antimony Salt—
In Transit, 10 kgs.
Barytes—
Antwerp, 285 cks. 41 brls.
In transit, 166
Rotterdam, 23
Borax—
Antofagasta, 663 bgs.
Boracic Acid—
Leghorn, 77 cks.
Borate of Lime—
Valparaiso, 2440 sks.
Caustic Potash—
Dunkirk, 75 dms. 2 cks.
Chemicals *(otherwise undescribed)*
Rotterdam, 4 cks.
Copper Pyrites—
Huelva, 1400 t. Matheson & Co.
Cream of Tartar—
Marseilles, 4 cks. Allan Bros. & Co.
Rotterdam, 2
Dyestuffs—
Algarobilla
Havre, 224 bgs. J. Servaes
Gutch
Rangoon, 749 bxs
Fustic
Corinto, 428 t. D. Midgley & Son
Vera Cruz, 2391 logs Bourne, Graham & Co.
Indigo
Calcutta, 468 chts.
Myrabolams
Bombay, 2019 bgs. Forbes, Forbes & Co.
,, 2162 D. Sassoon & Co.
,, 1733
Saffron
Valencia, 2 css.
Sumac
Palermo, 1300 bgs. 415 cks.
Farina—
Hamburg, 500 bgs. Brown, Geveke & Co.
Glucose—
New York, 40 brls.
Horn Piths—
Monte Video, 43608 R. B. Watson
Iodine—
Valparaiso, 148 brls.
Litharge—
Rotterdam, 14 cks.
Manganese—
Rotterdam, 1 ck.
Naphtha—
New York, 4075 brls.
Ochre—
Rouen, 40 cks. R. J. Francis & Co.
Marseilles, 37
Phosphates—
Ghent, 30 t.
Precipitate—
Sestri Levante, 30 cks. H. Bath & Son
Saltpetre—
Colombo, 2008 bgs
Hamburg, 115 cks.
Soap—
Leghorn, 25 bxs. Baring & Co.
,, 300 Brown Bros. & Co.
Soapstone—
Genoa, 508 bgs.
Stearine—
Antwerp, 6 bgs.
New York, 50 dms.
Sugar of Lead—
Hamburg, 12 cks.
Sulphur—
Catania, 260 bgs. 27 brls.
Tar—
In transit, 30 brls.
Tartar—
Bordeaux, 10 cks.
Tartaric Acid—
Rotterdam, 3 cks. 20 kgs.
Ultramarine—
Rotterdam, 8 css.
White Lead—
Antwerp, 8 cks.
Ghent, 10
Zinc Ashes—
Marseilles, 22 cks.
Zinc Oxide—
Antwerp, 80 brls.

TYNE.

Week ending January 16th.

Alum Earth—
Hamburg, 17 cks. Tyne S. S. Co.
Phosphate Rock—
Savannah, 500 t.
Sulphur—
Harburg, 190 t. Clephans & Wiencke
Sulphur Ore—
Pomaron, 1,430 t. Mason & Barry
Zinc Oxide—
Antwerp, 25 brls. Tyne S. S. Co.

GLASGOW.

Week ending January 21st.

Alkali—
Antwerp, 1 ck.
Ammonium Sulphate—
Antwerp, 1 css.
Barytes—
Rotterdam, 46 brls. Jas. Rankine & Son
Barytes Sulphate—
Antwerp, 32 cks.
Brimstone—
Girgenti, 2,000 c. Thomas Lawrie
,, 5,000 Richard Smith
Chemicals *(otherwise undescribed)*
Rotterdam, 1 cs. Jas. Rankine & Son
Cream of Tartar—
Marseilles, 15 cks.
Dyestuffs—
Annatto
Bordeaux, 3 cs. J. & P. Hutchinson
Argois
Bordeaux, 18 bgs. J. & P. Hutchinson
Extracts
Antwerp, 3 cks.
Madder
Rotterdam, 2 cs. Jas Rankine & Son
Sumac
Marseilles, 250 bgs.
Farina—
Antwerp, 20 bgs.
Danzig, 200
Glucose—
New York, 600 brls.
Ochre—
Rouen, 97 cks.
Potash—
Rotterdam, 8 cks. Jas. Rankine & Son
Soap—
Marseilles, 1 css.
Sodium Acetate—
Antwerp, 18 cks.
Sulphur—
Messina, 400 bgs.
Tartar—
Bordeaux, 14 cks. J. & P. Hutchinson
Waste Salt—
Hamburg, 1,000 bgs.
White Lead—
Rotterdam, 54 cks. Jas. Rankine & Son

HULL.

Week ending January 14th.

Alkali—
Flushing, 5 css Zeeland S. S. Co.
Ammonium Nitrate—
Rotterdam, 7 cks.
Barytes—
Bremen, 17 cks. Veltmann & Co.
,, 83
Rotterdam, 39 Lawson & Son
,, 22
Antwerp, 45 Bailey & Leetham
Rotterdam, 49 Blundell, Spence & Co.
Chemicals *(otherwise undescribed)*
Copenhagen, 6 pks. Wilson, Sons & Co.
Dunkirk, 60 ,,
Hamburg, 100 kgs. ,,
Bari, 100 cks. ,,
Antwerp, 12 20 dms. ,,
Dyestuff *(otherwise undescribed)*
Hamburg, 175 bgs. Wilson, Sons & Co.
Dyestuffs—
Alizarine
Rotterdam, 49 cks. Hutchinson & Son
,, 9 pks. W. & C. L. Ringrose
Fustic
Hamburg, 1,697 pcs. Wilson, Sons & Co.
Sumac
Trieste, 135 bgs. Wilson, Sons & Co
Palermo, 120 ,,
,, 250 ,,
Farina—
Harlingen, 200 bgs.
Ochre—
Rouen, 21 cks.
Phosphate—
Ghent, 1,005 bgs. 100 t. Wilson, Sons & Co.
Pitch—
Hamburg, 48 cks.
Plumbago—
Hamburg, 20 cks.
Quicksilver—
Hamburg, 2 bottles. Wilson, Sons & Co.
Saltpetre—
Hamburg, 49 pks.
Soap—
Bari, 1 css.
Tar—
Ny Carleby, 268 brls.
Tartaric Acid—
Rotterdam, 4 cks. Lawson & Sons
Ultramarine—
Rotterdam, 16 cks. 10 cs.
White Lead—
Rotterdam, 87 cks.
,, 9 Hanger, Watson & Morris
,, 9 G. D. Webster & Son
,, 11

GRIMSBY.

Week ending January 9th.

Chemicals *(otherwise undescribed*
Antwerp, 10 pks.
Dyestuffs—
Indigo
Rotterdam, 12 pks.
Farina—
Dieppe, 53 pks.
Glucose—
Hamburg, 60 pks.
Tartar—
Dieppe, 10 css.

GOOLE.

Week ending January 6th.

Alum—
Rotterdam, 26 cks.
Caoutchouc—
Boulogne, 10 cks. 2 css.
Copper Pyrites—
Huelva, 986 t.
Dyestuffs *(otherwise undescribed)*
Boulogne, 132 cks. 12 cs.
Dyestuffs—
Alizarine
Rotterdam, 31 pks.
Potash—
Calais, 22 brls. 19 drms.
Potassium Muriate—
Rotterdam, 29 cks.
Saltpetre—
Rotterdam, 100 bgs.
Antwerp, 135
Tar—
Ghent, 25 cks.
Tartar—
Rotterdam, 10 cks.
Waste Salt—
Hamburg, 600 bgs. 500 cks.
Zinc Oxide—
Antwerp, 20 brls.

EXPORTS OF CHEMICAL PRODUCTS

OF

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending January 20th.

Acids—		
Rio de Janeiro,	10 cs.	£11
Acetic Acid—		
Cape Town,	3 cs.	£14
Alkali—		
Hong Kong,	4 c.	£4
Auckland,	10 t. 3	66
Alum—		
Rabat,	1 t.	£6
Ammonia—		
Yokohama,	4 css.	£8
Ammonium Carbonate—		
Sydney,	10 cs.	£22
Cologne,	13 cks.	29
Melbourne,	1	9
Ammonium Chloride—		
Melbourne,	4 cks.	£24
Natal,	15 kgs.	18
Cologne,	5	25
Ammonium Sulphate—		
Philadelphia,	50 t.	£511
Rotterdam,	145 t.	1,468
Hamburg,	97 19 c.	955
Demerara,	15	165
Rotterdam,	300	3,178
Arsenic—		
Natal,	8 c.	£7
Antwerp,	9 t. 10	123
Carbolic Acid—		
Calcutta,	20 drs.	£11
Carbonic Acid Gas—		
Bordeaux,	12 tubes.	£36
Carbon Bisulphide—		
Boston,	7 c.	£110
Sydney,	200 drs.	100
M. Video,	4	7
Caustic Soda—		
Zanzibar,	13 c.	£7
Lyttleton,	10 t. 4	105
Constantinople,	10 5	105
Hong Kong,	4	6
Auckland,	7 13	83
Aden,	8	7
Auckland,	5 1	52
Chemicals *(otherwise undescribed)*		
Cape Town,	6 pks.	£13
Vera Cruz,	6	16
Calcutta,	1 cs.	14
Hamburg,	3	12
Auckland,	17	27
Algoa Bay,	3	17
Bombay,	11 c.	32
Azores,	2	20
Rangoon,	5	45
Natal,	3	14
Adelaide,	6 128	383
Citric Acid—		
Christiania,	5 c.	£36
Reval,	4	31
Dunedin,	2 cs	12
Cologne,	10	70
Hamburg,	4 kgs. 22 cks.	552
Amsterdam,	6	45

Coal Products—

Aniline Dyes
Sydney, 1 cs. £25

Aniline Oil
Dunkirk, 18 puns. £750

Anthracene
Dusseldorf, 590 cks. £4,015
Cologne, 236 2,017

Benzol
Calais, 30 cks. £191
Rotterdam, 84 93 dms. 2,374
Hamburg, 1 pun. 16 356
Philadelphia, 15 150

Benzine
Sydney, 20 dms. £5

Creosote
Bordeaux, 824 brls. £965

Naphtha
Treport, 47 brls. £125
Melbourne, 20 drms. 15
Wellington, 30 26
Sydney, 20 24
Rotterdam, 59 pks. 280

Naphthaline
Philadelphia, 75 cks. £121
Hamburg, 18 152
Le Treport, 50 bgs. 35

Paraffin Wax
Cape Town, 28 dms. £30
Auckland, 3 tks. 144
Melbourne, 40 bgs. 235
Paris, 52 cs. 160
Rouen, 35 140
Marseilles, 40 135
Genoa, 15 44

Pitch
Antwerp, 171 t. £307
Venice, 1,245 2,090
Salonica, 40 brls. 16
Dunkirk, 613 1,065
Huelva, 1,130 2,478
Boston, 1,000 cks. 555

Tar
Adelaide, 200 drs. £45
Pt. Elizabeth, 200 pks. 10
Dunedin, 18½ cks. 10 brls. 26
Algoa Bay, 25 dms. 10 rnlts. 9

Tar Oil
Paris, 25 cks. £105
Treport, 30 50

Toluol
Rotterdam, 170 cks. £499

Copperas—
Rabat, 1 t. £25

Copper Sulphate—
Wellington, 10 c. £8

Cream of Tartar—
Brisbane, 5 pks. £28
Mayboro, 6 cs. 27
Dunedin, 1 t. 95
Rockhampton, 5 c. 23
Townsville, 2 9
Newcastle, 1 3 120
Melbourne, 3 15 367
Adelaide, 1 103
Wellington, 1 8 134
Lyttleton, 18 90

Disinfectant—
Treport, 35 cks. £30
Durban, 6 8
Barbadoes, 78 drs. 42
Trinidad, 20 15 pks. 62
Melbourne, 46 cs. 103
Calcutta, 25 10
Madras, 150 95

Guano—
Demerara, 15 t. £150

Hydrochloric Acid—
Barbadoes, 1 t. 14 c. £34

Manure—
Hamburg, 70 t. £770
Christiania, 25 140
Jersey, 123 1,230
Bordeaux, 100 480
Barbados, 100 1,100
Marseilles, 28 10 c. 150
Alexandria, 1 15 14
Ghent, 290 3,190
Malaga, 117 14 866
St. Lucia, 112 1,162

Mirbane—
Paris, 20 cs. £58

Oxalic Acid—
Dunkirk, 15 t. £520

Phosphorus—
B. Ayres, 1 cs. £7
Wellington, 13 113
Melbourne, 5 35

Phosphoric Acid—
St. Lucia, 1 t. £17

Picric Acid—
Melbourne, 10 c. £46

Potassium Bicarbonate—
Melbourne, 4 c. £6

Potassium Bichromate—
Melbourne, 1 t. 2 c. £37

Potassium Cyanide—
Auckland, 5 c. £59
Shanghai, 2 cs. 22

Potassium Sulphate—
Barbadoes, 5 t. £55

Salammoniac—
Yokohama, 10 cks. £74
Salonica, 1 t. 3 c. 36
Natal, 5 kgs. 9
Constantinople, 2 63
Bourgas, 9 14

Salt Cake—
Antwerp, 265 t. £464

Saltpetre—
Valencia, 14 c. £14
Pt. Elizabeth, 5 t. 2 89
Dunedin, 1 22
B. Ayres, 11 13
Melbourne, 20 kgs. 22
Adelaide, 20 22
Rio de Janeiro, 5 3 11
Wellington, 2 4
Natal, 10 1

Sheep Dip—
Cape Town, 35 cs. £98
Boca, 500 1,500
Natal, 100 drs. 15 82

Soda—
Cape Town, 11 c. £4
B. Ayres, 3 1

Soda Ash—
B. Ayres, 6 t. £43

Soda Crystals—
Montreal, 6 c. £2
Hong Kong, 1 t. 4
Newcastle, 21 16 76
Cape Town, 7 1
Natal, 13 3
Barbados, 7 1

Soda Salts—
Melbourne, 2 c. £30

Sodium Acetate—
Melbourne, 1 t. £21

Sodium Bicarbonate—
Malta, 10 c. £4
Lyttleton, 5 t. 2 33
Hamburg, 10 5
Melbourne, 2 18
Barbadoes, 10 4
Auckland, 2 13

Sodium Bisulphite—
Lyttleton, 1 t. 3 c. £7

Sodium Carbonate—
Rockhampton, 2 t. £15

Sodium Hyposulphite—
M. Video, 6 c. £4

Sodium Sulphate—
Ghent, 50 t. £75

Sulphur—
Fayal, 8 brls. £6

Sulphur Dioxide—
New York, 2 c £30

Sulphur Flowers—
Algoa Bay, 18 c. £12
Newcastle, 3 t. 10 40

Sulphocyanide of Mercury—
New York, 1 c. £17

Sulphuric Acid—
Cape Town, 3 t. 19 c. £14
Penang, 1 5 13
Melbourne, 5 cbs. 200
Natal, 60 css. 57
New York, 13 25
Aden, 10 10

Tartaric Acid—
Gibraltar, 1 c. £11
Sydney, 10 62
Newcastle, 1 t. 8 167
Otago, 2 12
Wellington, 3 19
Lyttleton, 2 20
Melbourne, 2 8 300

LIVERPOOL.

Week ending January 20th.

Acetic Acid—
B. Ayres, 12 c. £25

Alum—
Santos, 2 t. 7 c. £14
Valencia, 3 16
Smyrna, 4 10 22
Ancona, 3 19 15
Calcutta, 19 16 100
Melbourne, 8 13 47
Lisbon, 5 7 27

Ammonia—
Rosario, 12 cs. £14
Valparaiso, 5 c. 2 q. 9

Ammonium Carbonate—
Yokohama, 3 t. £96
Montreal, 1 29
New York, 14 17 c. 1 q. 216

Ammonium Chloride—
Antwerp, 6 c. £7
New York, 1 t. 19 3 q. 45

Ammonium Sulphate—
Venice, 20 t. 5 c. £220
Gd. Canary, 27 1 q. 290
Valencia, 253 17 3021

Bleaching Powder—
Ancona, 107 cks.
Bahia, 40 css.
Havana, 20
St. John's, Nfd., 1
Vigo, 2 brls.
Bombay, 30
Boston, 618
Calcutta, 73
New York, 726
Rouen, 86
San Sebastian, 49

Borax—
Havana, 12 c. £19
Cienfuegos, 12 22

Boracic Acid—
B. Ayres, 9 c. £17
Havre, 7 3 3 q. 270

Brimstone—
Calcutta, 15 t. £97
Boston, 76 10 c. 397
Kurrachee, 2 2 16
Melbourne, 100 19 1q. 591

Caustic Soda—
Amsterdam, 292 dms. 10 kgs.
Ancona, 267
Antwerp, 36
Bahia, 15
Baltimore, 135 brls.
Barcelona, 698 10 cks. 40
Batavia, 32
Bombay, 36
Boston, 625 5
B. Ayres, 15
Calcutta, 321
Cartagena, Spn. 20
Cienfuegos, 20
Corral, 5
Demerara, 12
Genoa, 32
Hamburg, 55 25 kgs.
Havana, 65
Leghorn, 50
Lisbon, 9
Madrid, 30 40 cks.
Malta, 57
Matanzas, 12
Melbourne, 18
M. Video, 150
New York, 207
Oporto, 90 10
Pernambuco, 25
Philadelphia, 5 50
Portland, Or., 25
Puerto Cabelo, 8
Rio de Janeiro, 10
Rosario, 20
Rotterdam, 166 3
San Sebastian, 100
Santos, 20
Seville, 95 45
Sydney, 112 6 bxs.
Tampico, 50 kgs.
Talcahuano, 20
Tarragona, 90
Trinidad, 20
Valdivia, 34
Vigo, 90

Carbolic Acid—
Rotterdam, 7 c.
Shanghai, 4
Rosario, 4 cks.
Ocos, 1

Chemicals *(otherwise undesc*
Constantinople, 4 c.
Nantes, 13
New York, 5 t.
Genoa, 10
Marseilles, 1 10
Odessa, 1
Amsterdam, 18
Beyrout, 7

Chromate Trioxide—
Bombay, 2 c.

Citric Acid—
Beyrout, 1 c.

Copperas—
Calcutta, 30 t.
Smyrna, 7 13 c.
Alexandria, 20
Kurrachee, 12 6

Copper Sulphate—
Rouen, 33 t. 13 c.
Valencia, 1
Venice, 15 1
Nantes, 87 14
Constantinople, 10 1
Ancona, 1 1
Barcelona, 10 2
Bordeaux, 25 2
Rosario, 12 10
Boca, 1 10
Marseilles, 46 19

Cream of Tartar
Beyrout, 1

Disinfectants—
Bombay, 6 t. 6 c.

Epsom Salts—
Rio de Janeiro, 190 kgs.

Gypsum—
New York, 26 t. 11 c.

Manure—
St. Nazaire, 60 t. 3 c.
Bordeaux, 350 8
Marseilles, 84 9
Havre, 155 15

Oxalic Acid—
Marseilles, 3 c.

Phosphorus—
Tampico, 10 cs.

Potash—
New Orleans, 15 c.
B. Ayres, 19

Potassium Chlorate—
Gothenburg, 10 t.
Calcutta, 1
Montreal, 5 c.
New York, 9 10
B. Ayres, 1
Hiogo, 15
Yokohama, 5
Rio de Janeiro, 2
Oporto, 1
Sydney, 7 10
Hamburg, 1

Potassium Prussiate—
Montreal, 5 c.

Salt—
Accra, 10 t.
Algoa Bay, 29½
Banana, 200
Baltimore, 200
Barbadoes, 36
Bonny, 20
Calcutta, 4291
Callao, 16
Cameroons, 68
Cape Coast Castle, 25
Cape Lopez, 13
Coquimbo, 100
E. London, 47
Ghent, 200
Hamburg, 50
Isles de Los, 99
Loango, 35
Manaos, 25
Melbourne, 100
Newcastle, 165
New Orleans, 500
Monte Video, 20
Old Calabar, 160
Para, 300
Pensacola, 400
Portland, Or., 325
Port Natal, 14 14
Rio del Rey, 25
Rio de Janeiro, 9
Rotterdam, 550
St. John's, Nwfld. 400
San Francisco, 50
Talcahuano, 60

PRICES CURRENT. WEDNESDAY, JANUAR

PREPARED BY HIGGINBOTTOM AND CO., 116, PORTLAND STREET, MANCHESTER.

The values stated are F.O.R. at maker's works, or at usual ports of shipment in U.K. The price in different localitie

	£	s.	d.
Acids:—			
Acetic, 25 %, and 40 % .. .. per cwt.	7/- & 11/-		
,, Glacial .. .. ,,	50/-		
Arsenic, S.G., 2000° .. .. ,,	0	13	6
Fluoric .. .. per lb.	0	0	3¾
Muriatic (Tower Salts), 30° Tw. .. .. ..per bottle	0	0	10
,, (Cylinder), 30° Tw. .. .. ,,	0	3	0
Nitric 80° Tw. .. .. per lb.	0	0	2¼
Nitrous .. .. ,,	0	0	1¾
Oxalic .. .. nett ,,	0	0	3½
Phosphoric, 1750° .. .. ,,	0	0	11½
Picric .. .. ,,	0	0	10¾
Sulphuric (fuming 50 %) .. .. per ton	15	10	0
,, (monohydrate) .. .. ,,	5	10	0
,, (Pyrites, 168°) .. .. ,,	3	5	0
,, (,, 150°) .. .. ,,	1	5	0
,, (free from arsenic, 145°) .. .. ,,	1	7	6
Sulphurous (solution) .. .. ,,	2	15	0
Tannic (pure) .. .. per lb.	0	1	2
Tartaric .. .. ,,	0	1	1
Arsenic, white powdered .. .. nett per ton	11	5	0
Alum (loose lump) .. .. ,,	5	5	0
Alumina Sulphate (pure) .. .. ,,	5	0	0
,, ,, (medium qualities) .. .. ,,	4	15	0
Aluminium .. .. per lb. 2s. 8d. to	0	3	2
Ammonia, ·880=28° .. .. per lb.	0	0	3
,, =24° .. .. ,,	0	0	1¾
,, Carbonate .. .. nett ,,	0	0	3½
,, Muriate .. .. per ton	21	0	0
,, ,, (sal-ammoniac) 1st & 2nd .. per cwt.	35/- & 33/-		
,, Nitrate .. .. per ton	40	0	0
,, Phosphate .. .. per lb.	0	0	10½
,, Sulphate (grey), London .. .. .. per ton	10	12	6
,, ,, (grey), Hull .. .. ,,	10	12	6
Aniline Oil (pure) .. .. per lb.	0	0	8¼
Aniline Salt ,, ... ,,	0	0	7½
Antimony .. .. per ton	70	0	0
,, (tartar emetic) .. .. per lb.	0	1	0
,, (golden sulphide) .. .. ,,	0	0	10
Barium Chloride .. .. per ton	7	15	0
,, Carbonate (native) .. .. ,,	3	10	0
,, Sulphate (native levigated) .. .. .. ,,	45/- to 75/-		
Bleaching Powder, 35 % .. .. nett ,,	7	10	0
,, Liquor, 7 % .. .. ,,	2	10	0
Bisulphide of Carbon .. .. ,,	11	15	0
Chromium Acetate (crystal .. .. per lb.	0	0	6
Calcium Chloride .. .. per ton	2	5	0
China Clay (at Runcorn) in bulk .. .. .. ,,	17/6 to 35/-		
Coal Tar Dyes:—			
Alizarine (artificial) 20 % .. .. per lb.	0	0	8¾
Magenta .. .. ,,	0	3	9
Coal Tar Products			
Anthracene, 30 % A, f.o.b. London .. per unit per cwt.	0	1	2½
Benzol, 90 % nominal .. .. .. per gallon	0	2	3
,, 50/90 ,, ... ,,	0	1	9
Carbolic Acid (crystallised 40°) .. .. .. per lb.	0	0	5⅛
,, (crude 60°) .. .. per gallon	0	1	2
Creosote (ordinary) .. .. ,,	0	0	1¼
,, (filtered for Lucigen light) .. .. .. ,,	0	0	2½
Crude Naphtha 30 % @ 120° C. .. .. .. ,,	0	1	0
Grease Oils, 22° Tw. .. .. per ton	2	5	0
Pitch, f.o.b. Liverpool or Garston .. .. .. ,,	1	14	0
Solvent Naphtha, 90 % at 160° .. .. .. per gallon	0	1	2
Coke-oven Oils (crude) .. .. ,,	0	0	3
Copper .. .. per ton	44	12	6
,, Sulphate .. .. ,,	14	15	0
,, Oxide (copper scales) .. .. ,,	45	0	0
Glycerine (crude) .. .. ,,	15	0	0
,, (distilled S.G. 1250°) .. .. ,,	50	0	0
Iodine .. .. nett, per oz.	0	0	9
Iron Sulphate (copperas) .. .. per ton	1	12	6
,, Sulphide (antimony slag) .. .. ,,	2	0	0
Lead (sheet) for cash .. .. ,,	11	15	0
,, Litharge Flake (ex ship) .. .. ,,	15	0	0
,, Acetate (white ,,) .. .. ,,	26	10	0
,, ,, (brown ,,) .. .. ,,	18	10	0
,, Carbonate (white lead) pure .. .. .. ,,	20	0	0
Nitrate .. .. ,,	20	10	0
Lime, Acetate (brown) .. .. per to			
,, ,, (grey) .. .. ,,			
Magnesium (ribbon and wire) .. .. per o			
,, Chloride (ex ship) .. .. per to			
,, Carbonate .. .. per cwt			
,, Hydrate .. .. per ton			
,, Sulphate (Epsom Salts) .. .. per to			
Manganese, Sulphate .. .. ,,			
,, Borate .. .. per cwt			
,, Ore, 70 % .. .. per to			
Methylated Spirit, 61° O.P. .. .. per gallo			
Naphtha (Wood), Solvent .. .. ,,			
,, ,, Miscible, 60° O.P. .. .. ,,			
Oils:—			
Cotton-seed .. .. per to			
Linseed .. .. ,,			
Lubricating, Scotch, 890°—895° .. .. ,,			
Petroleum, Russian .. .. per gallo			
,, American .. .. ,,			
Potassium (metal) .. .. per o			
,, Bichromate .. .. per lb			
,, Carbonate, 90% (ex ship) .. .. per to			
,, Chlorate .. .. per lb			
,, Cyanide, 98% .. .. ,,			
,, Hydrate (Caustic Potash) 80/85 % .. .. per to			
,, ,, (Caustic Potash) 75/80 % .. .. ,,			
,, ,, (Caustic Potash) 70/75 % .. .. ,,			
,, Nitrate (refined) .. .. per cwt			
,, Permanganate .. .. per cwt			
,, Prussiate Yellow .. .. per lb			
,, Sulphate, 90 % (ex ship) .. .. per to			
,, Muriate, 80 % (do.) .. .. ,,			
Silver (metal) .. .. per o			
,, Nitrate .. .. ,,			
Sodium (metal) .. .. per lb			
,, Carb. (refined Soda-ash) 48 % .. nett per to			
,, ,, (Caustic Soda-ash) 48 % . ,, ,,			
,, ,, (Carb. Soda-ash) 48% .. .. ,, ,,			
,, ,, (Carb. Soda-ash) 58 % .. .. ,, ,,			
,, ,, (Soda Crystals) .. .. .. ,, ,,			
,, Acetate (ex-ship) .. .. ,,			
,, Arseniate, 45 % .. .. ,,			
,, Chlorate .. .. per lb			
,, Borate (Borax) .. .. nett, per ton			
,, Bichromate .. .. per lb			
,, Hydrate (77 % Caustic Soda) (f.o.b.) nett pr. ton			
,, ,, (74 % Caustic Soda) ,, ,, ,,			
,, ,, (70 % Caustic Soda) ,, ,, ,,			
,, ,, (60 % Caustic Soda) .. ,, ,,			
,, ,, (60 % Caustic Soda, cream) (f.o.b.) ,,			
,, Bicarbonate .. .. ,,			
,, Hyposulphite .. .. ,,			
,, Manganate, 25% .. .. ,,			
,, Nitrate (95 %) ex-ship Liverpool .. .. per cwt			
,, Nitrite, 98 % .. .. per to			
,, Phosphate .. .. ,,			
,, Prussiate .. .. per lb			
,, Silicate (glass) .. .. per to			
,, ,, (liquid, 100° Tw.) .. .. ,,			
,, Stannate, 40 % .. .. per cwt			
,, Sulphate (Salt-cake) .. .. per ton			
,, ,, (Glauber's Salts) .. .. ,,			
,, Sulphide .. .. ,,			
,, Sulphite .. .. ,,			
Strontium Hydrate, 100% .. .. ,,			
Sulphocyanide Ammonium, 95 % .. .. per, lb			
,, Barium, 95 % .. .. ,			
,, Potassium .. .. ,			
Sulphur (Flowers) .. .. per ton			
,, (Roll Brimstone) .. .. ,,			
,, Brimstone: Best Quality (nominal) .. ,,			
Superphosphate of Lime (26 %) .. .. ,,			
Tallow .. .. ,,			
Tin (English Ingots) .. .. ,,			
,, Crystals .. .. per lb			
Zinc (Spelter) .. .. per ton			
,, Chloride (solution, 96° Tw.) .. .. ,,			

10 ton lots

THE

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AND

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les, reports, and correspondence on all matters of interest to the al and allied industries, home and foreign, are solicited, ondents should condense their matter as much as possible, one side only of the paper, and in all cases give their names dresses, not necessarily for publication. Sketches should be separate sheets.

unications for the Editor, if intended for insertion in the week's issue, should reach the office not later than **Tuesday ng.**

ers are invited to forward items of intelligence, or cuttings from wspapers, of interest to the trades concerned.

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rtisements intended for insertion in the current week's issue reach the office by **Wednesday morning** at the latest.

CURRENT TOPICS.

THE INSTITUTE OF CHEMISTRY.

THE present month will perhaps be an epoch marker for the Institute of Chemistry—at any rate an opportunity has at last been given for the Institute to bestir itself, and to work more in accordance with its Charter, and with the views and feelings of the majority of its supporters.

The Institute was founded to elevate the work of analytical and consulting chemistry, but somehow or other the management of its affairs has gradually drifted into the hands of those who have but little sympathy with professional men. The management having fallen into the hands of professors at colleges and other public institutions, they have not unnaturally endeavoured to secure for themselves, and apparently with good effect, not only the loaves and fishes but the baskets which held them, and all they could secure besides. In fact, their aims have been too plain from the beginning, and it is not surprising that more than one-half of the Fellows of the Institute have for some time been grievously dissatisfied with the management of Institute affairs by its Council.

There is now an opportunity for the Council to redress many of its shortcomings in the past. We have it on good authority that the Registrar and Secretary has resigned his post, which he has held since the formation of the Institute, and which period has been characterised by a barrenness unexampled in the annals of any society since the Deluge. What it has been pleased to call the proceedings of the Institute are a disgrace to any civilised society.

The fact is the Institute affairs will never be properly managed until the registrar and secretary is made to give his whole time to the affairs of the Institute. It is not likely that a man in active practice is going to let his own business go to rack and ruin, for the sake of attending a few hours a day at the registered offices; and it is more than probable that if a man is selected to fill the post who has any other business to attend to, the affairs of the Institute will still be relegated to the midnight oil, the domicile of the registrar and the office of the Institute will be synonymous terms, and the business hours of the Institute 12 o'clock midnight. The Council have now the power of setting matters right, and we await with much interest the result of their deliberations.

COMMERCIAL CASES IN THE LAW COURTS.

A specimen of what suitors may expect when they enter the Law Courts may be seen from a short report of a case which within the last few days came before one of Her Majesty's judges. After reading the report of this case it is surprising indeed if commercial men prefer the law courts to arbitration.

The case in question was one in which judgment had been obtained against a widow named Large for the sum of £41. The amount was for rent, and Mrs. Large had disput d

liability by reason that her husband had been killed by gas escaping from the drains. Mr. Justice Grantham, before whom the case came, on discovering that the amount of costs was not less than £700., mildly observed that "this was one of the most scandalous things he had ever heard of." There was "a fund" in connection with which administration proceedings are pending, and Mr. Justice Grantham observed that the moment a fund was in court, it seemed to be treated like a cow—a thing to be milked.

£700. against £41.!—rather a big percentage for the Majesty of the Law.

ELECTROLYTIC CHLORINE.

A letter which we publish in another column puts the matter of the electrolysis of chlorides in a nutshell. There are many who have but imperfectly studied the technology of the alkalies who believe that the electrolysis of chlorides to be a modern invention. This is by no means the case. It is a very old invention. The practical introduction of such a process has always been stopped by the cost of the manipulations. It is a comparatively easy thing to make chlorine by means of electricity, and for the matter of that caustic soda also, but it is quite a different matter to suppose that it has as yet been made a profitable undertaking. Perhaps the time is coming when this may be accomplished, but before that we shall require cheaper electricity, and the perfection of a great number of details with which the non-technical reader can scarcely be acquainted. So far we have never seen or heard of any electrical process which promises to produce bleaching powder for less money than it can be made by other methods.

THE MANUFACTURE OF CHROMIUM PIGMENTS.

(Continued from page 37.)

B.—THE TECHNOLOGY OF CHROME YELLOW MANUFACTURE.

THE following formulæ for the production of various yellows are given as embodying the considerations already mentioned :

1st. For soluble lead salts :—

	Kilos.
Lead acetate	100
Potassium bichromate	18
Sulphuric acid (66° B.)	12

This mixture yields a yellow of the formula $PbCrO_4$, $PbSO_4$. To obtain good shades the amount of water employed should not be less than 1,000 litres, or double as much with the nitrate. In the latter case it is better to neutralize the lead nitrate and to replace the acid by the sulphate of an alkali or magnesium, or preferably aluminium ; for the neutralization of the bichromate, the best substance is magnesite. The formula thus becomes : Lead acetate and bichromate as before , magnesite, 6 kilos., and aluminium sulphate, 27 kilos.

2nd. The Basic Acetate Method.—Litharge, 76 kilos., acetic acid (30 per cent.), 42 ; bichromate, 21·5 ; sulphuric acid, 21·5 ; water, 2,000 to 3,000 litres. To obtain a denser chrome 10 kilos. of soda should be added to the acetate and 5 of the sulphuric acid replaced by 10 of aluminium sulphate. For the production of an orange chrome the following formula is given : Litharge, 76 kilos. ; acetic acid (30 per cent.), 42 ; bichromate, 24 ; Solvay's soda, 15 ; and caustic soda (100 per cent.), 5. Care must be taken that the temperature does not rise sufficiently high to spoil the shade.

3rd. The White Lead Method.—In this case the white lead must be in the finest state of subdivision possible and suspended in the water ; white lead, 100 kilos. ; nitric acid (36° B.), 12 ; bichromate, 13 ; and aluminium sulphate, 10 ; or nitric acid (40° B.), 44 ; bichromate, 24 ; sulphate, 20, the latter giving the more fiery shade. For the production of an orange, white lead, 100 kilos. ; nitric acid (36° B.), 18 ; bichromate, 28 ; and caustic soda, 8, the latter being best added to the bichromate before precipitation, and the temperature kept between 65° and 75° C.

4th. The Basic Chloride Method.—The same proportions and temperature are suitable here as in the case of the white lead.

5th. The Sulphate Method.—Lead sulphate, 100 kilos ; bichromate, 24 to 45 ; Solvay's soda, 8·75 to 16 ; ammonia (24 per cent.), 1 to 2 ; and acetic acid (30 per cent.) 5 to 10. The sulphate in the form of a cream being gradually added to the other ingredients after solution.

C.—ZINC CHROMATES.

Although it is possible to prepare lead chromates having shades varying imperceptibly from the palest lemon to a deep granite red, in the case of the zinc compounds scarcely any variation from the normal is possible, this being, however, different from anything obtainable with lead. Zinc yellows fall considerably below the ordinary chromes in their colouring power, but they are faster in light and are less poisonous. More than 80 per cent. of the amount annually made in Germany is used for the production of zinc green by mixing with Prussian blues, of which substance Holland, Switzerland, and Hungary are the greatest consumers. The zinc yellows met with in commerce vary in their constitution considerably, being usually acid chromates of zinc and potassium, basic zinc chromates being rare. Ordinary salts of zinc invariably contain small amounts of iron, which must be removed before they are used in the manufacture of colours. The simplest method is to heat them with the quantity of permanganate theoretically necessary to convert all the iron present into the ferric state, adding zinc hydrate, which need not be free from iron ; after thorough stirring, the whole is allowed to settle and filtered, when the liquid will be found to contain not a trace of iron. On the addition of chromate to such solutions, a yellow precipitate ($ZnCrO_4$) falls, but owing to its great solubility in the liquid this process is valueless. By using an excess of bichromate the zinc chromate combines with some of the alkaline salt, forming the compound $(ZnCrO_4)_3K_2Cr_2O_7$, which may be washed without loss ; but on drying yields an extremely hard, sandy powder, possessing, in spite of its fine colour, no value as a pigment. By neutralising the two solutions before precipitating, a much higher yield of chromate is obtained, but still so much chromic acid is lost as to make the process too expensive to pay. Formerly an addition of calcium chloride was made to the neutral solutions so as to precipitate some of the acid as calcium chromate which remained mixed with the zinc salt. The best results, both in regard to yield and colour, are obtained by adding to the zinc salt sufficient alkali to decompose one-quarter of it, so that the chrome may have the formula $(ZnCrO_4)_3.ZnO$. To the bichromate enough alkali should also be added to convert it into the normal salt. It is to be remarked that the nature of the metal combined with the chromic acid has the greatest influence on the shade of the zinc yellow, so much so that in manufacturing "acid" zinc yellow, the use of sodium bichromate is inadmissible. A basic zinc yellow prepared from the sodium salt has a redder and more cloudy shade than one made from the potassium compound, but the difference is hardly noticeable when sodium potassium chromate is employed.

Modern zinc yellows are invariably prepared from acid solutions, and consist of a double salt of zinc chromate and potassium bichromate, mixed with a varying amount of unchanged zinc oxide, which must not be regarded as an adulteration of the pigment, as its presence gives the substance "body." As previously stated, sodium bichromate is inadmissible, as it does not form similar double salts. The raw material is usually zinc oxide, which is met with in a state of great purity ; by the addition of sulphuric acid this is converted into basic zinc sulphate, potassium bichromate solution is added, and the whole stirred vigorously for an hour. At the end of this time the zinc chromate which was previously in a state of partial solution, begins to separate out in the form of a brilliant yellow scum on the surface of the liquid consisting of $(ZnCrO_4)_3K_2Cr_2O_7$, while the solution rapidly becomes almost colourless. Suitable proportions are :—Zinc oxide, 100 parts ; sulphuric acid (66° B.), 60 ; and potassium bichromate, 100. Although it is hardly possible that any hydration takes place, it is found advisable to soak the zinc oxide in water for 24 hours before the other reagents are added, the sulphuric acid after dilution being added gradually. Great care must be taken that the solutions are all cold and the stirring is continuous to avoid the pigment being deposited in a hard sandy form. Zinc yellows thus prepared are not liable to change during washing in a manner analagous to the lead compounds.

II.—PIGMENTS CONTAINING CHROMIUM OXIDE.

Chromium oxide alone is of no value as a pigment, as useful shades can only be prepared from mercurous chromate, or from a mixture of ammomium bichromate and picric acid, both of which processes are far too expensive. Of the various pigments containing chromium oxide by far the best is Guignet's green, an oxyhydrate of chromium of the formula $Cr_2O(OH)_4$. This being absolutely unchanged by light, and being scarcely affected by any chemical action, is much employed for lithography, bank note, and calico printing. The process for its manufacture consists in melting together at a low red heat potassium bichromate and boric acid, the resulting chromium borate being decomposed by the action of water into the oxyhydrate. Formerly the fusion was conducted in ordinary reverberatory furnaces, but now muffles are generally employed, in which the temperature is much more easily regulated. Other pigments of this class mostly contain

ium phosphate, the best, having regard to the cost as well as the , being Plessy's green. This is prepared by reducing a mixture hromate and monocalcium phosphate with sugar. Other pig- of considerable technical interest are the chromium silico-phos- and their double salts with the phosphates of the alkaline . Under certain conditions it is possible to prepare from them s of unsurpassable beauty and purity. They are made by ng with sugar a mixture of bichromate, silico-phosphoric acid, alcium or barium phosphate. By the simple precipitation of ium salts by solutions of silico-phosphates no useful results are ed.

HARMONIOUS COLOURING.

E subject of this article is a system of Harmonious Colouring (belonging to the Harmonious Colouring Co., Ltd.,) by which rs can be combined in a manner as pleasing to the eye as a sweet of music is to the ear.

as frequently been said that one cannot lay down precise rules ouring; but that combination of colours must always be a matter dividual taste. If, however, any human being, exercising his idual taste, ventures upon any original and striking combination lours, it generally happens that to one person it will seem a ct arrangement, to another "atrocious taste."

ature's most daring and subtle contrasts, however, are always onious and pleasing to the senses. Take, for example, the ellous colour contrasts in the flower kingdom (we mean re's flower kingdom, not that of the professional landscape ener), the gorgeous tints of a summer sunset, and the plumage xotic birds, particularly those species which rejoice the heart e milliner, and adorn the hats of her lady customers.

e occasionally hears some one daring enough to venture upon icism of nature's colour combinations; but to the vast majority nankind the harmony seems always pleasing, the taste always ct.

a lecture delivered at Leeds some time since by Mr. Heaton, tated that nature's colour contrasts were always temperate. re never dressed anything in seventeen yards of magenta silk a pea-green bonnet; it has been left to mankind, or perhaps nankind, to do that.

ature, however, as we all know, can combine magenta and n without offending the most critical taste; various instances occur to the reader in which these colours are combined in the r world, in a perfectly pleasing and harmonious manner.

he Rev. H. R. Haweis, in his "Music and Morals," says:—

Colour now stands in the same kind of relation to the painter's as sound amongst the Greeks did to the art of the gymnast. as we speak of the classic age as a time long before the era of music, so by-and-bye posterity may allude to the present age e age before the colour-art was known—an age in which r had not yet been developed into a language of pure ion, but simply used as an accessory to drawing, as music was to bodily exercise and rhythmic recitation."

Mr. Haweis then proceeds to express his conviction that a ur-art exactly analogous to the sound-art of music is possible, is amongst the arts which have to be traversed in the future, as ture, architecture, painting, and music have been in the past.

He points out that we lack a system of colour-notation, which ld as intensely and instantaneously connect itself with every ible tint, and possess the power of combining colours before the mind's eye, as a page of music combines sounds through the eye to the mind's ear.

He gives as an example the impression made upon the responsive eye at a display of fireworks by the exquisite tints painted upon the dark curtain of the night, selecting fireworks in preference to the most gorgeous sunset because in pyrotechny we have art—namely, something into the composition of which the mind of man has entered—as opposed to nature.

We must not pursue Mr. Haweis any further; but any of our readers who are interested in the question before us, will doubtless read for themselves his chapter on "Sound-art and Colour-art."

Colour and sound have long been held by scientists to have some analogy with each other, and the existence of such analogy has been foreshadowed for many years.

In the "Philosophy of Nature," published by Mr. John Murray in 1813, the author quotes Sir Isaac Newton's remark "that the breadths of the seven primary colours were proportional to the seven musical notes of the gamut."

Later, Professor Tyndall, in his work on "Heat," referring to the "Physical Cause of Colour," says: "This spectrum is to the eye what the musical scale is to the ear; each colour represents a note, and the different colours represent notes of different pitch. The vibrations which produce the impressions of red are slower, and the ethereal waves which they generate are longer than those which produce the impression of violet, while the other colours are excited by waves of intermediate lengths. The length of the waves, both of sound and light, and the number of shocks which they respectively impart to the ear and eye have been strictly determined."

We need not trouble our readers with the figures which Professor Tyndall gives, but simply direct attention to the fact that the colours of the spectrum rise gradually in pitch from red to violet. That is the practical limit of our vision—beyond the violet we have rays of too high a pitch to be visible, while beyond or below the red we have rays of too low a pitch to be visible.

Both as regards light and sound our organs embrace a practical range, beyond which, on both sides, though the objective cause exists, our nerves cease to be influenced by it.

We see, therefore, that Sir Isaac Newton and Professor Tyndall, to say nothing of other authorities, both agree that there is an analogy between the laws which govern the production of sound and of light or colour—colour then answers to pitch.

Sound as now defined is the impression, or the effect of an impression, made on the organs of hearing by the vibration or waves of the air or other medium with which those organs are in contact, such vibrations being caused by the tremulous or vibratory motions of the sounding body, the pitch or degree of acuteness of the sound or note depending upon the number of vibrations in a stated time.

The human ear is limited in its range of hearing musical sounds, just as we have already stated the eye is limited in its range of perception of colour.

If the vibrations number less than 16 a second, we are conscious only of the separate shocks.

If they exceed 38,000 a second, the consciousness of sound ceases altogether.

The range of the best ear covers about eleven octaves; but the sounds available in music are produced by vibrations comprised between the limits of 40 and 4,000 a second, embracing seven octaves.

Colour may be defined as that by virtue of which bodies present a different appearance to the eye irrespective of their form. In total darkness bodies have no colour, therefore colour is a property

Diagram illustrating the Scale or Octave of Colours produced by Wilkinson's System from Mixtures of Red, Yellow, and Blue.

C	C♯ D♭	D	D♯ E♭	E	F	F♯ G♭	G	G♯ A♭	A	A♯ B♭	B	C
24		27		30	32		36		40		45	48
RED	RED and ORANGE	ORANGE	ORANGE and YELLOW	YELLOW	GREEN	GREEN and BLUE	BLUE	BLUE and INDIGO	INDIGO	INDIGO and VIOLET	VIOLET	RED and WHITE
Primary Colour	1 part C 1 part D	3 parts C 3 parts E	1 part D 1 part E	Primary Colour.	4 parts E 2 parts G	1 part F 1 part G	Primary Colour	1 part G 1 part A	8 parts G 4 parts C	1 part A 1 part B	3 parts G 9 parts C	

or attribute of light, although the density or atomical constitution of a body by determining the number and character of the light vibrations transmitted by reflection to the eye also determines the colour.

Mr. C. H. Wilkinson, a Yorkshireman, residing near Huddersfield, has adopted the analogy between colour and sound above mentioned, and after many years of patient labour has produced a colour chart, consisting of a series of diagrams based on this analogy, and by the use of which it is claimed endless colour combinations can be made, all of which will be as harmonious and pleasing to the eye as the musical equivalents for such colour combinations would be to the ear.

The base or starting point of Wilkinson's System is the fact that the seven natural notes C D E F G A B of the diatonic scale have a certain mathematical relation to each other.

The relative rates of vibrations of these notes as given by Helmholtz, Tyndall, and others, and shown on the accompanying diagram, are as follows :—

C	D	E	F	G	A	B	C
24	27	30	32	36	40	45	48

It is perhaps hardly necessary to repeat that the quickest vibrations and the shortest waves correspond to the extreme violet, while the slowest vibrations and longest waves correspond to the extreme red of the solar spectrum ; but acting on primary colour, as those proportions in pigments give colours sufficiently dark for all practical purposes.

White and black are separate and distinct combinations from the keyboard or base colours, and, being nature's light and shade, harmonize in octave mixtures with all the colours, either side by side with the colours or mixed with them.

The octave mixtures of black and white are also shown on the first diagram or keyboard, and are produced in a similar manner to the octave mixtures of colours—working from 1 part black plus 1 part white, and doubling the total weight of the first mixture by the addition of white only.

In compiling the twenty-four ranges of colours, which compose the entire series of diagrams, the nineteen octaves of keyboard primaries are set in a row in consecutive order. For example, take range 1, which is C minor, common chord C E♭ G, each of these notes C E♭ G is drafted singly throughout eighteen octaves; and the colours so drafted are set in perpendicular lines on the range card, with the colour taking its rise out of the first octave at the bottom, and the colour taking its rise out of the eighteenth octave at the top, and as only eighteen shades of the colour are required in each range, the single notes C E♭ G finish in the eighteenth octave.

Then by chording C E♭ G in every combination throughout the nineteen octaves, and placing the colours from each set of chords in perpendicular lines, a complete range, comprising twenty-four rows of colours, including the single notes above named, is obtained.

In chording, the notes are all struck from left to right, hence the necessity of requiring the nineteenth octave to complete eighteen colours in some of the perpendicular lines. That is to say the colour represented in the top line of range 1 by the chord C E♭ G C is produced by the combination C E♭ G in the eighteenth octave, and C in the nineteenth octave.

Through all the twenty-four ranges there is a number attached to each colour, from 1 to 432 ; but as the same number occurs in every range it is necessary, when recording or specifying, to precede each number by the number of its range, as range 1, No. 432 ; range 2, No. 432, etc.

With every colour the quantities of primaries and black and white used in its production are specified by figures representing parts, thus :—1 red, 1 yellow, 1 blue, means equal weights of all three colours ; and where a chord is given, it means that the colour shown is composed of equal parts of the colours representing the individual notes in that chord, thus C E G means a colour composed of 1 part C (red), 1 part E (yellow), and 1 part G (blue).

At the bottom and top of each perpendicular line of colours appears the musical sign which that line of colours represents ; and the colours on any horizontal line take their rise from the octave corresponding to such line, reckoning from bottom to top, thus :—C E G C on the fifth horizontal line is composed of C E G in the fifth octave, and C in the sixth octave.

(To be continued.)

RECENT TRADE MARK.—"Titania" ; for disinfecting soap for dogs, cattle, &c., and for medicated soap. By the Liverpool Patent Soap Company (Limited), 21, Dale Street, Liverpool. 159,008, 159,009.

THE MANUFACTURE OF IRON FRE ALUMINIUM SULPHATE.

(Continued from page 77.)

ALKALINE PROCESSES.

ON the Continent and in some parts of England, sul alumina, substantially free from iron, is prepared from b cryolite, by what may be termed an alkaline process, inasmu alkali be not directly employed in the manufacture, it is obtai bye product. These methods are interesting because some have borne the test of manufacturing practice, and besides op field of investigation to the technical chemist of this country. shortly recapitulate the main features of these processes.

From cryolite.—This mineral, found extensively in Greenl double fluoride of sodium and aluminium having the formula Al_2F Its decomposition may be effected, according to Thomsen, by a mixture consisting of 1 equivalent of cryolite, with 6 equiv calcium carbonate for some hours at a red heat. Carbonic ac evolved, whilst fluoride of calcium and aluminate of soda ar thus :—

$$(Al_2F_6,6NaF)+6CaCO_3=(Al_2O_3,3Na_2O)+6CaF_2+6C$$

The calcined mass is lixiviated in water when the aluminat passes into solution, leaving the insoluble fluoride, etc., beh Copenhagen where this process is used, the decomposition cryolite and chalk is carried out in muffle furnaces which are heat the charge more regularly than the ordinary reverberatory employed in a Hamburg works, and moreover, to yield a hig centage decomposition of the mineral. The strong liquor co the aluminate of soda is settled to free it from all sedimentary and then run off into a separate vessel where it is decomposed carbonic acid gas evolved in the decomposition of the cryoli this purpose the fuel gases from the furnaces are cooled, scrubb rid of SO_2, and finally pumped through the aluminate of sod Hydrate of alumina and carbonate of soda are thus obtained. desired to obtain the precipitate in the granular form in gelatinous, the decomposition of the aluminate is affected by bicarbonate of soda. The clear soda liquor is separated from cipitate and boiled down, whilst the alumina (after it is th washed) is dissolved in sulphuric acid, and the resulting solutio in the usual way to obtain a solid product.

Soluble aluminate of soda may also be obtained from cryoli wet way, according to Sauerwein, by boiling the very finely mineral in milk of lime, viz. :—$Al_2F_6,6NaF+6CaO=Al_2O_3($ $+6CaF_2$. When the fluoride of calcium has settled, t liquor is run off and the residue washed with water, the first being added to the strong liquor whilst the second is used i water for making fresh milk of lime. The decompositio aluminate of soda into carbonate of soda and hydrate of alum be carried out as above indicated, viz. : with CO_2 gas, or in this it may be accomplished by constantly stirring the heate with very finely ground cryolite, the following reaction taking $Al_2O_3(O\,Na_2)_3+Al_2F_6, 6Na\,F=2\,Al_2O_3+12\,NaF$. The fl sodium is separated from the alumina by decantation and wash may be again decomposed with lime into caustic soda and fluoride of calcium. The caustic soda may be converted into a condition, while the fluoride of calcium is a bye product of value.

Again, an attempt has been made to establish a manu process by acting on ground cryolite with sulphuric acid, sulphates of alumina and soda are obtained as a residue, hyd acid being evolved, but this process, owing to obvious diffic well as the low value of the sulphate of soda, and aqueous HF o offered no inducement for development.

From Bauxite.—The fact that native hydrate of alumina i in caustic alkalies and insoluble in alkaline carbonates, has g to an alkaline process of preparing sulphate of alumina from bau this process is carried out in England and in certain part Continent with considerable success. In actual practice the a of soda is not formed in the wet way by boiling the ground b caustic alkali, but by calcining it at a high temperature with c of soda in an ordinary reverberatory or muffle furnace. In lieu a Leblanc mixture of a salt cake, limestone, and coal may be u either case the resulting fused mass is lixiviated with water in vats, in order to separate the aluminate of soda and other products from the insoluble residue. The clear liquors are subjected to a preliminary process of purification ; and secondl action of a current of fuel gases obtained from the calcining fur from a lime kiln. The CO_2 in these gases splits up the alu soda, hydrate of alumina being precipitated in a more or le condition, according to the temperature and pressure under w decomposition takes place, and into carbonate of soda which

ion. If the bauxite contains silica, the silicate of soda formed
neously with the aluminate is decomposed by the carbonic acid
, and consequently the alumina is often contaminated with
The precipitated alumina after being thoroughly washed till
n alkali is dissolved in oil of v triol in lead-lined tanks. A
cess is used in order to neutralize all the acid. The liquor is
tered, boiled down to the desired density, and solidified in
rays.
ulphate of alumina obtained in this way invariably contains
ible quantities of iron, although these are small, and usually
issolved in water the solution appears muddy, due to the
e of hydrated silica or alumina. For the purposes of the dyer
product is not very suitable, but it is well adapted for
ne finer qualities of paper.
ugh an industrial process based on these chemical reactions and
ns appears at first sight to be a simple one, yet there are
difficulties met with in the course of its realisation which have
its progress and development. Though this process is in active
n, it is no guarantee that it is a cheap one. Its success
on the nature and composition of the raw aluminous material
the supply of carbonic acid gas which it is possible to obtain from
aces or lime kiln, as well as on chemical supervision of a high

ave made no allusion as yet to the somewhat ingenious process
d 10 years ago by Newland, for the preparation of sulphate
ina from the crude liquors obtained by dissolving bauxite in
ecause the finest sulphate of alumina obtained by this process
so much iron that it cannot possibly be ranked in the
of those processes that yield a substantially pure product.
d's method is however worth mentioning, because it is the
mplete attempt of the kind to obtain, by purely mechanical
ulphate of ammonia free from iron. The crude liquors are
ted to a density of 74° Twad. at 170° Fah., and then allowed
allize by cooling. The soft scaly crystals are then broken up
mother liquor into a magma, and this pumped or otherwise
nto a filter-press under a final pressure of 150 to 200 lbs. per
. The crystals are thus obtained in the form of hard cakes and
of nearly pure $Al_23(SO_4)+18\ H_2O$. The quantity of iron they
varies with the quality of bauxite employed. The mother
om the first crop of crystals is again concentrated and crystal-
d the magma again filtered. The cakes from this second crop
als are usually added to the original crude bauxite liquor,
he mother liquor is again put through the same process of con-
on, crystallization, and filtration. The liquor from the third or
ssing is evaporated down to a suitable density and solidified.
a very crude product.

FATALITY AT A CHEMICAL WORKS.

adjourned inquest on the body of John Moore, aged 37, of 29,
ajor-road, Stratford New Town, who met with his death while
at the chemical works of Messrs. Boake, Roberts, and Com-
arpenter's-road, was held at the works recently.
ury having made a prolonged examination of the centrifugal
, from which the deceased was supposed to be taking waste
the time of his death.
rogono was called, and he stated that he examined the body at
uary on Saturday, the 9th ult. He found a severe injury on
side of the head, the skull and temple bones being broken.
of the skull was undoubtedly the cause of death.
is stage a letter was read from Messrs. Elliott and Company,
ers of the centrifugal machine, stating that they had examined
ken machinery, and could find no defects or weakness which
count for the accident.
Foreland, the foreman of the phosphoric acid department of
Boakes, Roberts, and Company's manufactory, said he was in
hine house with the deceased, a man named Tucker, who was
with deceased, William Dale, the engineer, and a labourer.
left the house about ten minutes when he heard a noise, and
back the machine was smashed, and deceased was lying
the wall. The machine was used for separating water from
te of soda, and it was deceased's duty to take the water away
ved from the machine.
Tucker, of Poplar, said he worked with deceased during Friday,
lt., through Friday night, and up to the time of the occurrence.
d been soda spinning. Witness left the machine-house
re 11 o'clock, after having started the machine. When he had
he yard a few minutes he heard a crashing, as of wood being
and he went back and found the machine smashed, and the
the shed partially torn down. He had been in charge of the
since it was fixed, eighteen months ago, and he had never had
any hitch with it. He could form no opinion as to how the machine got broken.

Henry Graves, of Bromley, foreman engineer, said he took particular notice of this machine about two months ago. It was then perfect, as far as he could judge. He could form no opinion as to the occurrence; the steam pressure that morning was 55 lbs., and this would drive the machine at about 1,100 revolutions per minute.

William Dale, recalled, said when he left the machine there was no one in the shed but deceased.

This was the whole of the evidence, and the jury, after a few minutes' deliberation, returned a verdict that deceased was killed by the bursting of the machine, but how this was caused there was no evidence to show.

THE JOINT IRWELL AND MERSEY RIVERS COMMITTEE.

A MEETING of the Irwell and Mersey Joint Committee was held at the Board-room of the Committee, Mosley-street, Manchester, last Monday, Mr. Alderman Joseph Thompson presiding.

The Clerk (Mr. Hulton) reported that he had received replies from several local authorities to communications which had been sent from the Committee. The Clerk to the Chapel-en-le-Frith Local Board wrote that his Board "consider that the report of your Chief Inspector was somewhat exaggerated as regards this district." The Board, he added, fully realised its responsibilities, and had been taking steps to remedy the evils complained of. The New Mills Sanitary Authority wrote through their clerk that instructions had been given to the inspector of nuisances to serve notice on all millowners and other owners of property on the banks of the river, warning them against polluting the river. The Clerk was further instructed to entirely contradict the statement made by the Chief Inspector in his report that all the refuse from the ashpits of the district was thrown into the river, and to inform the Committee that there were two tips provided by the Board for the purpose. The Hayfield Authority stated that they had appointed a committee to consider the question of dealing with the sewage of the district.

The Chief Inspector (Mr. Tatton) in his report stated that complaints had been made to a large number of manufacturers as to the practice of throwing cinders into the river. The usual practice was to pile the cinders on the banks within reach of the floods. About thirty who used to throw cinders into the river were now getting rid of the refuse by other means. Several local authorities had taken the matter up. He had again visited the valley of the Goyt, and he could not say that his former report could be modified. The usual plan seemed to be to dispose of house refuse and cinders by whatever means were convenient. Notice had been given to some of the offenders.

Dr. Hewitt suggested that the Chief Inspector's report should in future contain names, dates, and specific information. The Committee should follow up individual cases.

Mr. Killick moved that a log-book should be kept of all cases inspected, with full particulars of places, persons, dates, local authority, and pollution, to be open for the inspection of members of the Board.

Dr. Hewitt seconded the proposition, which was adopted.

The Clerk stated that, as a result of the communication addressed by the Committee to interested local authorities asking for information as to what steps were being taken to deal with the sewage of their respective districts, five authorities had sent no reply and 84 had replied. Of the latter number three had works in operation, ten had works in course of construction, 28 had schemes under consideration or before the Local Government Board, and ten had no scheme whatever.

Mr. Killick pointed out that at a meeting of the Macclesfield Town Council several of the members of that body had congratulated the town on the fact that money had been saved by their abstention from dealing with the sewage. If, he remarked, there were many authorities like Macclesfield the Committee would have plenty to do.

Dr. Hewitt said he was very much pleased with some of the statements made in the report presented to the Committee, but he hoped that their own inspector would be instructed to verify them. He would give authority to their inspector to take the necessary steps in every case where he saw cinders put into a stream, for there was no excuse for that at all. The question of sewage was a different matter, and before proceeding to legal action against any authority with regard to their treatment of sewage the Committee should have very ample information in its hands. They ought to have a very careful report both by Mr. Tatton and Professor Roscoe, if necessary, as to what was being done in the very best cases in their district. He found that out of eighty-four cases where they had made inquiries about thirty had absolutely done nothing, fifteen might be said to have made something like fair progress, and twenty—according to their own account—were doing very good work. They said they were turning into the river an effluent which was non-polluting, and if that was possible in twenty

cases it should be possible in every case. He should like to have a report from Mr. Tatton as to the genuineness of those twenty cases.

Mr. Maxwell stated, with regard to Bury, that the inhabitants of that borough were as anxious as anyone to see the river clear from pollution. Their plans for intercepting sewers were passed, but the public could not get the land at a reasonable price from Lord Derby, and consequently had determined deliberately to do nothing until better terms were placed within reach of the Corporation.

Mr. Groves advised the Committee to take up the challenge which Bury threw down, and take proceedings against the Corporation.

Mr. Alderman Hopkinson said Bury must do what other people had done.

The Chairman deprecated immediate action against Bury. If the Committee made a false step at the outset its influence would be injured. He recommended the Committee to wait until further information was before the members.

Mr. Alderman Forrest said that Manchester was the greatest sinner in respect of sewage. Manchester was doing practically nothing, and Salford was no better. (Mr. Groves protested against the latter statement.) Mr. Forrest said he was in Salford last week, and he saw the sewage pass through without any treatment at all. The usual explanation was given, that "something had gone wrong." (Laughter.) In the present state of the sewage problem he thought it was no use flying at people's heads with a prosecution without very full investigation. He moved that the replies received from the various local authorities should be referred to a sub-committee, and that meantime each place should be visited and reported on by the Chief Inspector or the sub-inspectors.

Dr. Hewitt seconded the resolution.

The Chairman reminded the Committee that while Manchester was doing nothing to purify the sewage to-day, she was doing a great deal to secure its purification in the future. Manchester had already paid something like a quarter of a million of money in respect of the sewage scheme now in progress.

Mr. Groves said it was not right that Salford should be held up to reproach. Salford was doing her best in this matter, and was purifying her sewage night and day. Mr. Forrest's visit was made on a day when a new process happened to be on trial.

The resolution was adopted, and on the motion of Mr. Alderman Hopkinson, seconded by Mr. Groves, it was agreed that the sub-committee's special and early attention should be called to the position of the authorities from whom no reply had been received, and of those who had stated that they had no scheme before them. It was also agreed, on the suggestion of Mr. Nevill, that Mr. Hulton should be instructed at once to write to the latter authorities "a very strong letter."

Mr. Groves called the attention of the Committee to the practice in Manchester of shovelling snow from the streets and tipping it into the rivers. After the recent snowfall there were hundreds of tons of snow sweepings thrown into the river by the Corporation. Manchester should be told to do what was done in Salford, where the snow was piled up until it dissolved.

This concluded the business.

THE ASSOCIATION OF SULPHATE OF AMMONIA MANUFACTURERS.

THE report of the Council of the above Association has just been published. There is no doubt that the Association is doing good work in furthering the interests of manufacturers.

The issuing of weekly reports has been, so it appears, of great use in enabling manufacturers to combat the movements of speculators.

In order to encourage the use of ammonium sulphate as a manure, the Association has disseminated a pamphlet which contains much useful information in regard to the use and application of artificial manures and composts. How far this movement is responsible for the marked increase in the home consumption, it is difficult to say, but it is a noteworthy fact that during four years the amount consumed has more than doubled itself.

Considerable advantages were also secured, through the medium of this Association, in relation to the transport of gas liquor in tank wagons, when the Railway Rates Committee were at their labours.

The question of the necessity for licenses for sulphate stills has also been under consideration, though, owing to unforeseen circumstances, the matter was not brought to a final issue.

The statistical tables have been altered somewhat, and afford some useful comparisons. Despite the reduction in the shipping dues at Hull, the exports from that port during the past year are lower than they have ever been, while the London exports have also fallen off considerably.

Still there has been a corresponding increase at Liv
Glasgow has more than doubled its shipments since 1890.

It is also interesting to note the quantities which are t
various countries, when it will be seen that though there
falling off in the consumption at many places, there has
much greater amount consumed in other British possession
tofore. So that it does not follow because a few of the l
have been taking less that the total consumption is on th
as a matter of fact the total shipments in 1891 were the
have ever been, being five thousand tons more than
beating the record in 1887 of 76,000 by three thousand odd

As an instance of the extended use of ammonium sulph
countries, although Germany and France have been tal
three years Spain and Italy have doubled their consumptio
the United States, whereas the total shipments over a per
years amounted to less than 150 tons, the quantity shipped
nearly fifty times that amount. In conclusion it is satisfac
the finances of the Association are in a healthy condition, t
balance to the credit account of nearly one hundred pounds

THE CHEMICAL INDUSTRY OF BER

(*Continued from page 76.*)

In regard to the foreign trade the influence exerted
tariffs must be remembered, Russia by this means being ent
Although in Russia only colours of lower quality are ma
yet consumers there are compelled by the enormous duty,
soon again be raised, to use the poorer sort which is m
there. The exportation to Russia is therefore limited to a
which are not manufactured at all in Russia. Prices
reduced, but, in spite of the reduction, the quantity exporte
which in former years reached a considerable height, was co
small. In Austria-Hungary domestic competition had mad
able advance. This was favoured not only by the custom
also by railway freights. Even with reduced prices the e
hardly be kept even with that of the preceding year.
height exportation was maintained only to those lands whi
permitted entry free of duty, but which could be reached
freights. Chief among these were Belgium and Engl
satisfaction it is to be noted that the Berlin Quick Steamboa
which was called into existence by the Berlin Industrial
contributed materially to quick and cheap transportation.
ness of freight rates enables Berlin manufacturers to compe
fully in Belgium and England with the home industries
these countries prices fell only moderately in 1890.

On the whole the Berlin chemical mineral colour in
maintained its position in the trade of the world excep
countries, from which it is kept out by customs duties. It w
to maintain this position so long as it remains in the track
until now trodden, *i.e.*, if it retains as its chief object the pr
fine, first-class wares, and leaves the manufacture of cheap,
to other producers.

Business in tin preparations was quiet in 1890. Price
were unimportant. In the last three months the consumpt
very noticeably in consequence of business stagnation in
industry, especially the silk industry, which has a great in
the sale of tin products. The scarcity of orders was chiefly
generally unfavourable condition of the trade in this branch
difficulties encountered in the exportation of textile prod
United States on account of the McKinley law and to Sou
on account of the unsettled condition of political affairs ther

Though the active demand, mentioned in last year's
chemicals, for pharmaceutical, photographic, and technic
continued in 1890, still the profits arising from their manuf
not increased. The requirements in regard to chemica
various pharmaceutical preparations have considerably inc
the publication of the third edition of the German pharma
the increased expense necessitated in obtaining the requir
finds little expression in increased prices. It is very desira
the preparation of a new edition of the German pharmacop
manufacturers be consulted, for thereby certain requirem
are now impossible of fulfilment, would be avoided, as, f
the recently required ammonical silver reaction in th
glycerine. The beforementioned unfavourable conditio
articles of this branch of the chemical industry is not at all
production.

The sale of ether and alcohol in 1890 showed no import
from that or the preceding year. The rise in the price of
the end of the year influenced the value of ether and alcoh
was felt more sharply at the beginning of the new year.
interruption of the demand those manufacturers were much

d made arrangements to produce large quantities of acetic ether, hich is used in the manufacture of the new gunpowder. This article ll remain weak so long as no constant regular sales are guaranteed.

The Staassfurt syndicate made no change in the price of bromine. In te of this fact, the prices of bromine preparations fell on account of ntinued competition among manufacturers. Quotations were so low at very little profit was left to the manufacturer.

The Chloral Hydrate Manufacturers' Union, which has long existed account of the increase of factories devoted to the manufacture of s article, has dissolved. As its consumption decreased on account the increased use of other hypnotics, the price of chloral hydrate fell 50 per cent. of what it had been for years.

Unfortunately the selling price of cyanide of potassium was not fected by the rise in the price of its raw material, yellow prussiate of tash.

The glycerine market, on the whole, was stagnant in 1890. Raw aterial fell at the end of the year to 70 francs. Speculation in this ticle in 1890 resulted in considerable loss. Quotations for refined or stilled wares, owing to sharp competition, at no time during the year owed the proper relation to the value of raw material.

The uncertainty in regard to the prolongation of the union of iodine oducers, with which the year 1890 began, lasted until May. Not til then could the English firm, which conducted the business of the dine union, declare that the union had decided to maintain the mer price, 9d. per ounce. During this long preliminary period of four nths, the business of iodine preparations was confined to covering mediate demands, and hence, notwithstanding subsequent manufac ng activity, considerable loss resulted to the manufacturers.

Correspondence.

**We do not hold ourselves responsible for the opinions expressed by our correspondents.*

ANSWERS TO CORRESPONDENTS.

C. R.—Your communication to hand, for which we thank you.

L.—Your letter has received attention, as you will see.

C. B. & Co. (Dublin)—Yes; see front cover of Journal. Alfred Smith; also Messrs. G. W. Arnott & Co., 21, Lime-street, London, E.C.

W. M.—Thanks for your letter. We are always pleased to receive information upon such matters.

C. & Co —You will see we have referred to the matter in our columns this week.

SEWAGE TREATMENT.

To the Editor of the Chemical Trade Journal.

Sir,—The letter which appeared in your issue of the 23rd inst. from r. Grimshaw, upon the subject of sewage purification, we think rcely calls for any reply from us, and we think that probably your aders would not be interested in any further correspondence upon the rely technical points which have been raised.

There is, however, one important practical aspect of the question, ich we do think your readers would be interested to know, *i.e.*, that e Alaminoferric process is now working in many places with much cess, whilst in no single instance can the advocates of "clarine" int to its even being used.

Will it not be quite time enough for them to speak about it when y have wiped out its past record of failures by a number of practical ils at sewage works over lengthened periods?—We are, Yours &c.,

Manchester Alum Works, PETER SPENCE & SONS.
Manchester.

GOLD-PLATED VITRIOL RETORTS.

To the Editor of the Chemical Trade Journal.

SIR,—Although I have no personal interest whatever in the question ed by Mr. William E. Heys in your issue of January 30th, I think ay not be out of place if I try to clear up that matter. The patent W. C. Heraens, evidently alluded to by your correspondent, does not ll refer to "gold-plated copper vitriol retorts," but to vessels made a combination of gold and *platinum*, produced by placing red-hot ets of both metals together, and rolling them out whilst hot, so that y form an inseparable body, in which the gold forms a quarter or an th of the total thickness. This is something totally distinct from at is understood by "plating" one metal with an extremely thin ting of another metal. This sort of protection does not at all resist enormous wear and tear within a vitriol retort; any mere "plating" old would be too porous for that purpose, whilst the continuous, stantial sheet of gold produced by Mr. Heraens, really allows no tact whatever with the metal lying underneath. In spite of this, Heraens has not ventured to choose for this purpose a base metal like copper, because in that case the slightest accidental injury to the coating of gold would instantly produce a hole in the retort. The above-mentioned combination of gold and platinum, produced in a novel way and employed for a novel object, has, in my opinion, been quite rightly passed by the German Patent Office, which rejects more than half of the applications made to it.—I am, Sir, yours truly,

Zürich, 1st February, 1892. GEO. LUNGE.

THE PRODUCTION OF CHLORINE AND SODA PRODUCTS FROM SALT BY ELECTRICAL DECOMPOSITION.

To the Editor of the Chemical Trade Journal.

SIR,—We are just now hearing a great deal about the above subject, and the question is being asked by alkali and bleach manufacturers, and users of these materials, whether there is any probability of electricity being rendered economically useful on a practical scale for producing chlorine and soda from salt.

It is "piper's news" to say that soda and chlorine can be produced from salt solution by electrical decomposition; but the question is, at what cost can a ton of salt be electrically decomposed, and the value of the products produced?

The principal cost, no doubt, is for coal for the production of electrical energy—coal consumed in boilers to produce steam for engine—engine to drive dynamo-electric machine—the wear-and-tear of electrodes (mainly with anodes)—and for other items directly connected with, or pertaining to, the electrolytic apparatus proper. For extensive plant, the boiler, engine, and dynamo power would form a large item. Of outlay for electric conductors, with good merchantable copper at from £40. to £50. per ton, we may reckon it as loss of interest on capital. The electrolytic tanks, too, should not seriously depreciate in value if well constructed and well put up; but a large number would be required, making this item an expensive one.

The anode question is an important one; it is, no doubt, experimentally solved by this time. But it is silly to talk of using expensive material for the purpose of anodes for practical purposes. As the subject evolves we shall most likely find another waste product turned to useful and practical account. I am alluding to the use of gas retort carbon as an anode.

The many ways in which it can be usefully employed for this purpose would entail drawing too much on your space to relate. After having obtained dense carbon, the question how to apply it is simply one of a mechanical character. Of course the renewals should be cheaply effected. This would be necessary under any conditions of application, because the carbon *will* disintegrate, at varying rates, according to its quality, the electric current density, etc. It is from considerations of this fact, that carbon does disintegrate under electrolytic action, that the anode question becomes important; but as the raw article is cheap, and always likely to be cheap, the difficulties connected with its use are by no means insurmountable. The difficulties connected with the form of cathode are not to be ignored, and particularly the subject of its polarization by hydrogen gas is to be considered, because the electrical energy required to do unit work is largely regulated by it.

If hydrogen is set free at all (there are means for preventing its being set free) it would, probably, on a large scale, be economical to collect it and use it for heating or other purposes; of course it is a source of danger, from its explosive properties, when mixed with air.

After obtaining chlorine gas and soda solution from the salt, the subject of their further treatment, as evaporation of the soda solution to marketable strengths, absorption of the chlorine by lime, etc, becomes one of well-known chemical manipulation.

It may, with almost certainty, be stated that the mere production of hypochlorite of soda by electrolysis of salt is farther from economical commercial realisation than the subject of obtaining the separate products, soda and chlorine; or, to put it another way, lime is cheaper, and more convenient in several ways, than soda for absorbing chlorine for producing hypochlorite commercially.

One electrical process which is said to have done some experimental work, and which is known as "Greenwood's," is just now being spoken of; but, from information to hand, it appears that the plant was very small and nothing like commercial quantities of salt have ever been decomposed by it—so I attach no practical importance to it. The length of runs were comparatively short; too short, in fact, to obtain reliable commercial data.

Another more important concern is that of the Electrolytic Caustic Soda and Chlorine Trust, whose process or processes were very satisfactorily demonstrated some time ago at a large paper mill in Kent; and the Electrolytic Trust are now erecting and have, I believe, almost completed, extensive practical works on the Medway, with the object of turning out some ten to twenty tons a week. After this practical concern, which is the most advanced commercially, has had a fair trial, we shall be better able to gauge the chances of electrolysis upsetting the ordinary chemical methods of alkali manufacture.

Yours, etc.,

London, February 2nd, 1892. ELECTRICAL EXPERT.

Legal Intelligence.

HIGH COURT OF JUSTICE.—CHANCERY DIVISION.

(Before Mr. Justice Romer.)

TURNER *v.* ELLIOTT.

THE plaintiff in this case is Mr. J. E. Turner, the owner of two freehold houses, called Brooklands and Covington-house, both in Park-road, Barnet. The defendant, Mr. J. J. Elliott, is the owner of land (adjoining the plaintiff's premises) on which are works of considerable extent, and in connection with the defendant's business of a photographer or photographic printer, and from which, according to the plaintiff's statement, he permitted to escape vapours, gases, smoke, and offensive smells, injurious to the health and comfort of, and occasioning nuisance and injury to, the occupiers of the plaintiff's premises. The plaintiff accordingly came to the Court for relief in the shape of an injunction to restrain the defendant, his servants, workmen, and agents from permitting any vapours, gases, smoke, or offensive smells to escape from the buildings or works of the defendant, or otherwise carrying on his works in such manner as to be injurious to the health or comfort of, or occasion nuisance or injury to, the plaintiff, or his family, or the other occupiers of his premises. The action came on for trial in May, 1891, and, after the trial had lasted several days, his Lordship, by consent, appointed Professor Raphael Meldola, F.R.S., to visit and inspect the premises, and to enquire and report whether or not the plaintiff's premises were affected by smells or smoke coming from the defendant's premises, and, if so, in what manner and to what extent, and how the same were caused or arose.

Mr. Haldane, Q.C., Mr. Shebbeare, and Mr. C. Lyttelton Chubb were for the plaintiff; and Mr. Finlay, Q.C., Mr. Neville, Q.C, and Mr. A. à Beckett Terrell for the defendant.

MR. JUSTICE ROMER found on the evidence that no nuisance arose from the defendant's chimney, but that there was a nuisance from the albumenizing process carried on at the defendant's works. His Lordship accordingly granted an injunction to restrain the defendant from permitting any vapour or offensive smell escaping from his works so as to be a nuisance to the plaintiff in respect of his premises. As, however, the plaintiff had not been successful in proving the whole of the allegations made by him, his Lordship ordered the defendant to pay only half of the plaintiff's costs, and directed that Professor Meldola's fee should be borne by the parties in equal shares. The operation of the injunction was suspended for a month.

QUEEN'S BENCH DIVISION.

(Before Mr. Justice Wills and Mr. Justice Hawkins.)

The case of Brown *v.* Foot, which came on for hearing last Monday, raised an important question under the Sale of Food and Drugs Act. It was an appeal by a milk dealer from a conviction by a magistrate for selling milk adulterated by the addition of 15 per cent. of water. Mr. Moyse, who appeared for the appellant, said the act provided that any person who sold to the prejudice of the purchaser any article not of the substance and quality of the article demanded should be liable to a penalty not exceeding £20. Now in this case the seller of the milk was the appellant's servant, who personally adulterated the milk after he took it from the appellant's premises. The appellant was entirely unaware of the adulteration. The learned counsel contended that the person liable under the section was the actual seller (that was the servant), and that an employer who was unaware of the adulteration could not be held liable for the conduct of the servant. The learned counsel cited a case decided by the Lord Chief Justice in support of his contention. Mr. Justice Wills: Of what interest is it to the servant to adulterate? Mr. Moyse said that that question was not inquired into, but he contended that the whole scope of the Act was that where there was no complicity there was no liability. Mr. Justice Hawkins, in giving judgment, held that it was not necessary to prove complicity or connivance by the master with the servant. The master was really the responsible seller within the meaning of the Act. Connivance, in his lordship's opinion, would not make the smallest difference in the responsibility of the master. The milk was sold by his authority as pure milk, and therefore the conviction must be affirmed. However, if there was reason to believe that the master was absolutely ignorant of the adulteration it might be a reason for a mitigation of the penalty if the magistrate thought fit. Mr. Justice Wills was of the same opinion, holding that the master must not only not sell an adulterated article himself, but must take care that his servant did not do so. The conviction was, therefore, confirmed with costs, but the case was sent back to the magistrate to exercise his discretion as to the amount of the penalty.

(Before Mr. Justice Mathews and a Special Jury.)

TURNER *v.* DASNIERES.

This case, which was a claim for wrongful dismissal, cam hearing recently. Mr. H. F. Dickens and Mr. Phipson were for the plaintiff; Mr. Jelf, Q.C., and Mr. Bray appeared on t side. The action was brought by Mr. Joseph Turner, a manufacturer, now carrying on business at Great Yarmouth, formerly had works at Queen's Ferry, Flintshire, which are now on by a company, against defendant, a dealer in pitch and products in Paris, London, and Liverpool. The plaintiff was by the defendant to act as his manager in London, and he damages for wrongful dismissal in the face of a three years' ag at a salary of £400. a year and commission. The defendant the dismissal on the ground that Mr. Turner was an inco buyer, and that he was found to be under a restriction not to with the Queen's Ferry Company in their district. Mr. Tur tended that the reason he could not buy was that the defendan not allow him to buy pitch at the market prices, but always w a shilling a ton under. With regard to the restriction, he considered the Flintshire Company had terminated their ag with him when he ceased to be managing director. Between t and his employment by the defendant he had been in bus Queensborough, but that was sold. Mr. Turner said he defendant when he engaged him his experience had been as facturer, not a buyer. He explained that the defendant always to buy at a shilling a ton under the market price, and that he discretion, having to obtain his instructions from Paris. examination Mr. Dasnieres admitted he had got a clerk in t at Philpott-lane to write him private letters about Mr. Tur that he had given that clerk £10. for a Christmas box. He plaintiff had asked him to give the clerk a Christmas box.

The jury returned a verdict for the plaintiff for £400. Mr. Mathew entered judgment accordingly.

WOLVERHAMPTON POLICE COURT.

(Before the Stipendiary, Mr. Neville.)

At the Wolverhampton Police Court recently, the Re Syndicate, Limited, of 38, Coleman Street, London, were su for permitting waste acid, known as galvanisers' pickle, to fl their works, Cannock Road, Wolverhampton, into the borou The Town Clerk (Mr. H. Brevitt) prosecuted, but there was present to represent the defendant company. An affidavit w showing that the summons had been served on the company's ing clerk, and Mr. Brevitt said he had received a letter company's solicitor asking for an adjournment, but his in were to proceed with the case. His worship decided to evidence, and Mr. Brevitt stated that on December 14th a Co messenger named Franks went to a manhole near the de works and took a bucketful of liquid which was being sent works into the sewer. A sample of the liquid was sent to the analyst, and his certificate disclosed a very disgraceful state o The defendant's contention was that the liquid had found its the sewer as the result of an accident at the works, but it wa strange that the accident should occur just at the time when was being taken of the refuse sent into the sewer. The diffic to detect such offences. In fact the Corporation were emplo day and night to trace where acid which found its way dow sewage farm came from, and it was seldom that the offenders detected. The Corporation believed that they were being by certain manufacturers in the town, and the condition at the Barnhurst Farm was getting very serious by reaso quantity of sludge which was accumulating. Owing to the of injurious ingredients in the sewage, an enormous quantity had to be used for precipitating purposes. Last year the li cost £1,000, or a sum equal to a penny rate. Robert Fra evidence as to taking the sample of pickle, and Mr. E. W. the borough analyst, in his certificate stated: "This is galvanisers' pickle. It contains 2,350 6 grains per gallon hydrochloric acid, and 3,408.3 grains per gallon of iron in Its acidity is enough to decompose limestone with avidity, will damage the fabric of the sewer. The large amount o solution is objectionable for the sewage operations at Ba In reply to the magistrate, the witness stated that the iron were undoubtedly very injurious to vegetation. The penalty of £20, including costs, was imposed, without a c penalty. Later on Mr. E. M. Whitehouse appeared as rep the company, and after apologising for being late, asked that might be allowed to stand over for a month to enable the firm measures to prevent any complaint in the future. The To objected to an adjournment, but after some discussion his granted an adjournment in order to allow the witnesses to examined, the defendants undertaking to pay the costs.

Trade Notes.

SONAL.—Dr. Tyndall, F.R.S., has resigned his position as the olitan gas referee.

L IN IRELAND.—A rich vein of coal is said to have been ered in Ireland between Dungannon and Cookstown.

SRS. J. VICKERS & SONS.—There is a rumour to the effect that . J. Vickers & Sons, of Widnes, have bought the works of . Snape & Co., and that they intend to dismantle the works, ly at all events.

MINIUM.—Upon page 78 of the present volume we assumed the ness of Board of Trade reports, and notified that the Aluminium ny, Limited, possessed a certain stock of metal at the time of their works. The Company have written us that their works closed.

WRITE ON GLASS.—An ink for writing upon glass or porcelain is by dissolving 10 parts of bleached shellac and 5 parts Venetian ine in 15 parts of oil of turpentine by immersing the containing in warm water; after solution is effected, 5 parts of lamp black orporated.

UID PETROLEUM AS A FUEL.—It is stated that the Inman rs are about to adopt petroleum as their fuel. The fleet consists arge boats, all of which are to have the necessary equipment d. This will, of course, very considerably increase the cargo- g capacity of the boats, besides abolishing stokers and coal rs.

ETY OF CHEMICAL INDUSTRY—SCOTTISH SECTION.—A meet- this section was held at the Philosophical Institution, Edinburgh, sday last. Three papers were on the agenda list, viz.:—(1) Dr. Aitken—"New Apparatus." (2) Mr. W. Hogben—"The ties and Manufacture of Celluloid." (3) Mr. A. R. Miller—Crystallization of Carbon—A Suggestion."

ETY OF CHEMICAL INDUSTRY: LONDON SECTION.—On Mon- ebruary 1st, papers were read by Messrs. J. A. Wanklyn and instone, on "The acids of the fatty series and certain of their ives," and by Mr. Watson Smith, on "The stability of certain nitrogen compounds occurring in coal-tar pitch."

ETY OF CHEMICAL INDUSTRY: LIVERPOOL SECTION.—On nday, February 3rd, Mr. J. H Dagger read a paper on manufacture and industrial value of aluminium and its alloys."

ETY OF CHEMICAL INDUSTRY: MANCHESTER SECTION.—The eeting of this section was held on Friday, February 5th, 1892, p.m., when Mr. L. Siebold, F.I.C., gave a paper on ier notes on some dyewood extracts and similar preparations," and Some laboratory notes on the estimation of zinc as sulphide," W. F. Lowe, F.I.C.

SRS. HENDERSON, CRAIG, & CO., LIMITED.—The 2nd general y meeting of this company was held on 26th ult., when the -sheet for the past year—audited by Messrs. W. B. Peat & Co., ed accountants—was presented, and a dividend of 10 per cent. ium on the Preference and 7 per cent on the Ordinary shares clared. £100. 5s. 6d. was written off for preliminary expenses, off the goodwill account, and a balance of £200. 9s. 7d. was forward to the next account.

OURLESS VARNISH.—Colourless varnish, for use on fine labels prints, as well as for whitewood and other spotless articles, is follows: Dissolve two and one-half ounces of bleached shellac pint of rectified alcohol; to this add five ounces of animal bone- which should first be heated, and then boil the mixture for ive minutes. Filter a small quantity of this through filtering and if not fully colourless, add more boneblack and boil again. his has been done, run the mixture through silk and through paper. When cool it is ready for use. It should be applied e and uniformity.

Market Reports.

TAR AND AMMONIA PRODUCTS.

is a great deal of talk about business in Benzol having been t so far very few transactions seem to have taken place. A ers were in the market which have been executed, but further has been prevented by the higher demand on the part of the . To-day prices may be said to be about 2s. 3d. for 90s. and for 50—90s. In anthracene there is no business doing, and makers seem to have it all their own way. The nominal e, however, 1s. for 30% A and 9d. for 30% B. With the n of pitch, all other tar products are flat. In the meantime ains its firmness, and the prices quoted for last week hold good y.

While the sulphate of ammonia market is superficially made weaker by the well-known clique of speculators, there is a rather strong under-current, and although business has been mentioned as having taken place at £10. 10s. f.o.b. Hull. It is very doubtful whether makers have accepted less than £10. 12s. 6d. The beginning of the month is usually made a happy hunting ground for "bear" manœuvres, and makers would do well to shut their eyes to these goings on, and calmly wait till an actual demand sets in, or till the operators are bound to cover their sales for this month, which are said to be large. At Liverpool, sulphate in single bags can be bought at £10. 10s., second-hand business being reported at Leith at the same price. Nitrate is reported rather firmer, and now 9s. 7½d. is asked.

MISCELLANEOUS CHEMICAL MARKET.

The market for alkalies generally is without any feature calling for special notice in the past week, but there is a fairly good all-round demand, and prices of all the staple products are without change. Caustic soda remains at former prices, viz., in 10 ton lots, 77% f.o.b. Tyne, £11. 5s.; and f.o.b. Liverpool, 74%, £11. 5s.; 70%, £10. 5s.; 60%, £9. 2s. 6d.; cream, 60%, £8. 17s. 6d. In soda ash the demand continues fairly even for all qualities, and the price is consequently without variation—quotations being from 1 5/16d. to 1 3/8d per degree, f.o.b. Liverpool and Tyne. Refined alkali 1 5/8d. per degree. Bleaching powder without change at £7. 10s. per ton on rails, and £7. 5s. for contracts over 12 months. Chlorate of potash firm at the advanee, viz., 5¾d. per lb., and chlorate of soda 7d. to 7¼d. per lb. Recovered sulphur still scarce and high in price on the spot, or for near deliveries, There is good demand for sulphuric and muriatic acids at full rates. Salt cake in bulk is value for 36s. to 38s. per ton at makers' works in various districts. Sulphate of copper still in an unsatisfactory position, and prices ruling from £14. to £14. 15s. per ton. In acetate of lime some little business has been reported for early deliveries, rather inside the nominal prices of £6. 17s. 6d. and £10. per ton for brown and grey respectively. Other acetates have rather a downward tendency in price, owing to small demand. Lead salts are weaker. White acetate at £25. 10s. to £26. c.i.f.; nitrate of lead, £21. per ton. Aniline salt and oil are without demand, and ruling at low prices, pure oil being quoted 8¼d. per lb., and aniline salt at 7¼d. Carbolic acid crystals are without any improvement, and price is nominally 5½d. for 39-40°. Potash, caustic and carbonate is steady in price, and in good demand, both for prompt and forward delivery. Sulphocyanides in small request. Prussiate of potash continues steady at 10½d. Bichromates only in limited demand, and without alteration in prices. General trade in chemicals is on the whole somewhat depressed.

REPORT ON MANURE MATERIAL.

Throughout the week there has been a dragging market both in nitrogenous and phosphatic material, and it has been difficult to effect sales even at some concession in prices.

Mineral phosphates continue to offer freely both for prompt and forward shipment, but with good supplies of material for spring requirements, and with but discouraging agricultural prospects, manure manufacturers are difficult to tempt to further business ahead. Florida 75/80% mineral phosphates offers at 9¼d. per unit in cargoes c.i.f. to U.K. and Continent, and 9d. would likely be business. Hot-air dried Charleston and Peace River Rocks are worth about the same money, though rather more asked. Continental phosphates of low grade offer freely, but the higher grades continue relatively dear, and with but little doing in them for U.K. Bones and bone meal are easier. River Plate cargoes, due or near at hand, would hardly fetch more than £4. 2s. 6d. or £4. 3s. 9d., and for summer shipment they could probably be bought at £4. 5s. or £4. 6s. 3d. There have been sales of fine crushed Kurrachee bones at £4. 10s., ex quay Liverpool, and less would likely be accepted for quantity. £4. 10s., ex quay Liverpool, accepted for Bombay bone meal afloat, and £4. 12s. 6d. to other parts. Common grinding bones at Liverpool are easier, £4. 3s. 9d. having been accepted for a good parcel of Cadiz, arrived. Owing to arrivals at port of call, nitrate of soda is easier, about 1½d. per cwt., there being now sellers of arrived cargoes at 9s. 6d. per cwt., and 9s. 7½d. having been paid in that position ten days ago. November-December shipments are not now worth more than 9s. 6¼d. to 9s. 7½d., according to size and test. Spot is fairly steady at 9s. 6d. to 9s. 7½d. per cwt., as in quantity and test.

Dried blood is less enquired for, and nearest value is 10s. per unit, in doubles, f.o b. Liverpool; 9s. 3d. to 9s. 6d. per unit, in single bags, f.o r. at works. Kainit scarce and enquired for: 45s., in bags, f.o.r., nearest value. Superphosphates steady at 45s. in bulk f.o.r.; at works for 26%.

THE METAL MARKETS.

LONDON, WEDNESDAY.—Pig iron firmer; Scotch warrants closed at 43s. cash. Middlesbrough 35s. 6d. cash, and Hematite 45s. 6d. cash. Copper quiet; Chili bars, G.O.B.'s and G.M.B.'s closed at £44. 5s. 0d. to £44. 6s. 3d. cash, and £44. 15s. 0d. to £44. 16s. 3d. three months. Tin steady; Straits closed at £89. 10s. 0d. to £90. 0s. 0d. cash, and £89. 15s. 0d. to £90. 5s. 0d. three months. Australian, £89. 12s. 6d. cash; English ingots, £93. 0s. 0d. to £93. 10s. 0d. Lead quieter: Spanish, £10. 15s. 0d.; English, £10. 17s 6d. to £11. 0s. 0d. Silesian spelter, ordinary, £22. 15s. 0d. Quicksilver dull: First and second hands, £7. 3s. 0d. Copper shares weak: Cape 1 11/16 to 1 13/16; Copiapo 2¼ to 2⅜; Libiola 2¾ to 2⅞; Mason and Barry 4 11/16 to 4 13/16; Rio Tinto 16⅞ to 17; Tharsis 5 7/16 to 5 9/16; Namaqua 1⅜ to 1⅝; Panulcillo ⅞ to 15/16.

GLASGOW, WEDNESDAY.—Market steady, with good business No Scotch done; closing with buyers at 43s. cash, sellers ask 1½d. more. Middlesbrough done at 35s. 6½d. cash; closing with buyers at 35s. 6d. cash, and 35s. 8½d. one month, sellers ask 35s. 6½d. cash Hematite done at 45s. 6d., 45s. 7d., 45s. 5½d., and 45s. 6d. cash, also at 45s. 8d. and 45s. 8½d. one month; closing with buyers at 45s. 6d. cash and 45s. 8½d. one month, sellers ask ½d. higher.

WOLVERHAMPTON, WEDNESDAY.—Finished ironmasters reported steady sale for bars, hoops, and merchant iron. Sheets and boiler plates neglected. Bridge and waggon plates brisk. Best bars, £8.; common, £6.; boiler plates, £9. to £10.; hoops, £6. 12s. 6d.; sheets, doubles, £7. 10s.; thin stamping sheets, £10. Pig deliveries are being made rapidly, consumers having profited by late experience and being desirous now of stocking iron. Prices firm. Lincolns, 48s. 6d. (stations); Derbyshires, 46s. (works); hematites, 57s. 6d. to 60s.; and Staffordshire cinder iron, 37s. 6d.

THE LIVERPOOL OIL AND COLOUR MARKET.

LIVERPOOL, WEDNESDAY.

OILS: Palm oil has been very quiet all the week, and there has been practically nothing doing, except in Lagos, which has declined somewhat in price. There has, however, been a fair business at £21. for both spot and forward. Olive was very slow early in the week, but it is moving steadily to-day at last week's prices. Linseed has been steady at 19s. 6d. to 20s. 6d. per cwt. in export casks, and sellers are steady thereat. Rape is very dull, with nothing doing. Cotton-seed has again still further declined. Prices were maintained at the beginning of the week, but eventually changed in favour of buyers. To-day's prices are:—Liverpool refined, 18s. 6d.; American, 19s. 6d. per cwt. Castor oil had a tendency to weaken early in the week, but it is now steady, with price of good seconds, Calcutta at 2⅝d., and first pressure French 2 3/16d. per lb. nominal. Tallow is not quite so firm as last week, but the market is still steady, and quotations remain unaltered. Resin: Common declined to 4s. 4¾d. per cwt. during the week, but to-day is again steady at 4s. 6d. per cwt. Medium grades are firm. Spirits of turpentine, owing to fresh arrivals, has declined. There has been, however, a fair business doing to-day at 25s. 3d., at which sellers remain steady. Petroleum is unchanged, with American at 5½d. to 6⅝d. and Russian refined 4⅝d. per gallon.

COLOURS without change. Ochres: Oxfordshire, common, £10. medium, £12., best, £15.; Derbyshire, common, 40s., medium, 50s., best, 60s. Welsh, best, 70s., seconds, 50s., and common, 18s.; Irish, Devonshire, 40s. to 45s.; French, J. C., 55s. to 60s.; M. C., 65s. to 67s. 6d. Umber: Turkish quiet. Devonshire, 50s. to 55s. White lead, red lead, and oxide of zinc unchanged. Venetian red, £6. 10s. to £10. Cobalt: Prepared oxide, 10s. 6d.; black, 9s. 9d.; blue, 6s. 6d. Zaffres: No. 1, 3s. 6d.; No. 2, 2s. 6d. Oxide of iron: common, £6.; medium, £10.; finest, £20.

THE LIVERPOOL MINERAL MARKET.

There is a firmer tone in our market this week. Manganese: Arrivals have somewhat improved, but they have all gone into consumption; prices are firmer. Borate, 6¼d. per lb.; sulphate, £21. 10s.; oxalate, 1s. 6d. per lb.; chloride, £15.; carbonate, £12. 10s., steady. Magnesite: Raw lump quiet and unchanged. Raw ground, £6. 10s., and calcined, £12. 10s. Bauxite (Irish Hill brand) in good demand at full prices; lump, 20s.; seconds, 16s.; and thirds, 12s. French chalk: Arrivals this week continue small, with a steady business doing at full prices, especially for G.G.B. "Angel White" brand; silvery, 90s. to 92s. 6d.; prime quality, 90s. to 95s.; superfine, 105s. Barytes—Carbonate: Prime lump exceedingly scarce on account of the weather preventing production, being quoted at 90s. to 95s.; nuts, 70s. to 80s.; whilst finest white sulphate is steady. "Angel White," No. 1, 70s.; No. 2, 60s. to 65s.; No. 3, 45s. Pumice-stone steady. Iron ore steady: Bilbao firmer on account of the strike; Irish and Cum unchanged; Santander and manganiferous, more doing. stone has continued steady; No. 1 lump, £5. 10s. smalls £5. to £5. 10s. Fullers' earth quiet; best lump, 5 impalpable ground, £7.; "Emerald" ground, 80s. Scheeli fram, tungstate of soda, and tungsten metal continue in fair prices firm. Chrome ore of high percentages inquired for, both and forward delivery. Antimony ore and metal have been Asbestos very firm. Potters' lead ore of best quality quiet; £12. 10s. to £13. 15s.; selected lump, £14. 10s. to £ Calamine quiet. Strontia sulphate (celestine) continues ver Limespar unchanged, especially for English manufactured, old brand in demand at 50s. (ground). Felspar unchanged. Flu Best quality scarce. Ferro manganese firmer, 75%, £12.; 85 15s. Plumbago brisk: Spanish, £5.; best Ceylon lump quotations; Italian and Bohemian, £4. to £12. per ton. "Fo £5. to £6.; Blackwell's "Mineraline," £10. French sand, 22s. 6d. Ground mica, £45. to £50. China clay steady; 18s. 6d.; good medium, 22s. 6d. to 25s.; best, 30s. to Runcorn). Bog ore (oxide of iron) steady; finest quality, 22s.

TYNE CHEMICAL REPORT.

TUES

Chemicals, a fair business doing without alteration in prices. ing powder, hards, £7. 15s. per ton, softs, £7. 10s. per ton; soda, 77% £11. 10s. per ton, 70% £10. 5s. per ton; recovered in 2 cwt. bags, £6. 10s. per ton; soda ash, 48% £5. 8s. 9d. 52% £5. 17s. 9d. per ton, 56% £6. 6s. 9d. per ton; alka £4. 18s. 6d. per ton; white alkali, 48% £6. 10s. per to £6. 15s. 6d. per ton, 52% £7. per ton; hyposulphite £7. per ton in 5-7 cwt. casks, £7. 15s. per ton in 1 cwt. 10 ton lots; silicate of soda, 75° Tw. £2. 13s. 6d. per ton, 1 £3. 13s. per ton, 140° Tw. £4. 2s. 6d. per ton; soda crystals, £3. 3s. 6d. per ton gross weight, in 2 cwt. bags £3. 3s. 6d. net weight, on rails, £3. 1s. 3d. per ton; chlorate of potash, 5 lb. less 6%; pearl hardening, £3. 10s. per ton; pure white sul alumina, £4. 10s. per ton; blanc fixe, £7. 10s. per ton; chl barium, £7. 10s. per ton; nitrate of baryta crystals, £17. p nitrate of baryta crystals, ground, £17. 10s. per ton; sul barium, £7. per ton; carbonate of alumina, £28. 10s. per ton; ate of soda, £33. 10s. per ton; hydrate of barium, £11. per

South Durham salt quiet at 9s. per ton f.o.b. Tees; rath business doing.

Coals: Trade is rather depressed, the dulness no doubt being i by the strike of the engineers, the consumption of coal on th being lessened in consequence. Best Northumbrian steam, ton f.o.b.; small steam, dull, at 3s. 6d. per ton f.o.b.; gas co demand, at 9s. to 9s. 3d. f.o.b. Coke steady. Manufactur dull and stocks accumulating.

WEST OF SCOTLAND CHEMICALS.

GLASGOW, TUE

The staving off of the recently threatened disaster to the oil and paraffin industry is now fully confirmed, and the agita already quietened down very considerably. Papers have y signed, but there is nothing perceptibly ahead which can af essential detrimentally. Market values of paraffin scale and w April 1st) will remain as at present, but the Scotch make little less in bulk, while the Americans will be entitled to sen more than under the agreement now soon to close. Product is quiet but steady, and late recovery in lubricating oil is maint

The sulphate of ammonia market is exceedingly lazy, and mostly to spot dealing; but the price has not suffered. Indee may be said to have been some slight gain, with the quot £10. 10s. to £10. 11s. 3d.—if not £10. 12s. 6d. Week's sh out of Leith were 981 tons.

With the exception of the rise in chlorate of potash ther change in general chemicals, the market for which continue idle. Union prices are, in the main, the standard but there i some slight shading done by holders.

Dyeing and calico printing are rather quiet, though the slightly better off than some time ago. The market for dyeing c is quiet, but steady.

Chief prices current are:—Soda crystals £3. 3s. 6d., nett Ty in lump, £5. 10s., nett Glasgow; soda ash, 1⅜d., less 1½% caustic soda, white, 74°, £11. 5s., 70/72°, £10. 5s., 60/62°, £9. and cream 60/62°, £8. 17s. 6d., all nett Liverpool; bicarbonate 5 cwt. casks, £6. 15s., and 1 cwt. casks, £7. nett Ty fined alkali, 1 3/16d., less 5% Tyne; bleaching powder, £7.

Production of Fast Yellow Mordant Dyeing Azo Dyes. A. Bang. 960. January 18.

Solidifying Petroleum and Carbo-hydrates and Re-liquifying the same. C. Allina. 964. January 18.

Apparatus for Cleaning Metals. R. Heathfield. 968. January 18.

Manufacture of Zinc Chlorine, Alkaline Sulphates, and Chloride of Zinc by Electrolysis of Solutions thereof. T. Parker, A. E. Robinson, and C. H. Parker. 982. January 18.

Refrigerating Apparatus. S. Puplett and J. L. Rigg. 1,004. January 19.

Improvements in Refuse Furnaces. B. D. Healey. 1,005. January 19.

Production of Alkaline Cyanides. Pierre Rogatien de Lambilly. 1,032. Jan. 19.

Improved Exciting Material for Galvanic Battery. H. Koller. 1,038. January 19.

Improved Tuyère. G. H. Burrows. 1,048. January 19.

Water Softening J. H. Bovenkerk, junr. and A. C. Kuyt. 1,054. January 19.

Bleaching and Disinfecting Starch and Fecula by Electrolysis. E. Hermite. 1,061. January 19.

Decorticating and Treating Ramie and Other Fibres. W. P. Thompson. 1,077. January 19.

Improvements in Petroleum Engines. L. Z. S. C. N. Picard and Duchemin. 1,082. January 19.

Steam Raising and Water Purifying Apparatus. E. D. Rose. January 20.

Improvements in Dry Electrical Elements C. Vogt. 1,141. January

Improvements in Thermometers. A. T. Rapkin, trading as Pastore Rapkin, and F. Cossor. 1,172. January 21.

Manufacture of Artificial Stone. A. Willard. 1,195. January 21.

Manufacture of Aluminium. C. Emo. 1,205. January 21.

Joints for Stone Ware or Metal Tubes. R. C. Frost. 1,206. January

Manufacture of Hardened Caoutchouc. H. Traun. 1,229. January

Manufacture of Colouring Matters. H. H. Lake. 1,231. January

Cold Air Refrigerating Machines. W. Garden. 1,321. January 22.

Improvements in Antifrictional Bearing Apparatus. W. J. Brewer. January 22.

Improvements in Thermometers. A. T. Rapkin and F. Cossor. January 23.

Manufacture of Colouring Matters. H. H. Lake. 1,390. January 23.

IMPORTS OF CHEMICAL PRODUCTS

AT

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending January 23rd.

Acetic Acid—

Holland,	34 pks.	Lister & Biggs
,,	133	Beresford & Co.

Alkali—

France,	300 c.	Arnati & Harrison

Alum—

Holland,	87 pks	Ohlenschlager Bros.

Barytes—

Belgium,	11 cks.	Leach & Co.
,,	20	J. L. Lyon & Co.
,,	60	W. Harrison & Co.
Germany,	24	O'Hara & Hoar
,,	137	W. Harrison & Co.
Holland,	2	J. L. Lyon & Co.

Brimstone—

Italy,	10 t.	C. J. Capes & Co.
,,	13	A. J. Humphrey
,,	2	Jessop & Co.

Caoutchouc—

Germany,	14 c.	Phillipps & Graves
Penang,	37	L. & I. D. Jt. Co.
Singapore,	24	R. & J. Henderson
Portugal.	3	Isaac & Samuel
,,	26	Elkan & Co.
Zanzibar,	69	L. & I. D. Jt. Co.
,,	21	Wallace Bros.
Germany,	92	J. Wilson

Caustic Potash—

France,	21 pks.	Fuerst Bros.
,,	64 c.	J. A. Reid
,,	100	F. W. Berk & Co.

Chemicals *(otherwise undescribed)*

U. S.,	20 pks.	Baiss Bros. & Co.
Italy,	114	Hughes, Chemery, & Co.
Germany,	10	Craven & Co.
Belgium,	6	Weatherley, Mead & Co.
Germany,	30	T. H. Lee
,,	20	F. Stahlschmidt & Co.
,,	32	Phillipps & Graves
,,	73	A. & M. Zimmermann

Copper Pyrites—

Spain,	1,929 t.	C. Tennants, Son & Co
,,	1,480	Anderson, Anderson, & Co.

Cream of Tartar

Spain,	2 pks.	Stafford, Allen, & Son
France,	4	Middleton & Co.
,,	10	W. C. Bacon & Co.
Spain,	20	,, ,,
Holland,	87	Middleton & Co.
France,	21	B. & F. Wf. Co.
,,	2	Smith, Abbott & Co.
,,	4	E. W. Carling & Co.
Holland,	27	N. Smith

Dyestuffs—

Argols

Cape,	17 pks.	Brown & Elmslie
France,	2	B. & F. Wf. Co.

Cochineal

Canary,	10 pks.	Swainston & Co.
,,	3	Marshall & French
,,	3	L. & I. D. Jt. Co.
,,	2	Bruce & White
,,	4	Kuhner, Henderson & Co.

Cutch

Rangoon,	500 pks.	A. G. Milne & Co.
,,	1,000	H. A. Litchfield

Extracts

Melbourne,	8 pks.	A. J. Humphrey
Austria,	197 brls.	,, ,,
Melbourne,	16 pks.	J. Gavin, Birt & Co.
France,	180	B. & F. Wf. Co.

Gambier

Singapore,	626 pks.	L. & I. D. Jt. Co.

Indigo

E. I.	63 chts.	Ross & Deering
,,	202	L. & I. D. Jt. Co.
,,	28	Phillipps & Graves
,,	18	Drolenvaux & Bremner
,,	18	Hicks, Nash, & Co.
,,	123	G. Ward & Son
,,	39	L. & I. D. Jt. Co.
,,	4	E. Bower & Co.
,,	10	H. Johnson & Sons
,,	26	Phillipps & Graves
,,	271	T. Ronaldson & Co.
,,	28	F. Huth & Co.
,,	166	Parsons & Keith
,,	53	R. & J. Henderson
Holland,	14	Clyde S.S. Co.
E. I.,	121	12 pks. Elkan & Co
,,	10	Ralli Bros.
,,	106	Patry & Pasteur

Myrabolams

E. I.,	387 pks.	L. & I. D. Jt Co.

Saffron

Spain,	1 pk.	B. & N. Wf. Co., Ltd.

Safflower

Spain,	1 pkt.	J. Knill & Co.

Sumac

Italy,	100 pks.	F. Roberts
,,	100	W. Shelcott
,,	694	J. Kitchin, Ltd.

Tanners' Bark

Adelaide,	102 t.	Devitt & Hett
Melbourne,	48	Beresford & Co.
,,	70	Baxter & Hoare
Austria,	2	T. Birch
Melbourne,	50	Leach & Co
Belgium,	26	Bevington & Son
,,	28	Oastler, Palmer, & Co.
Melbourne,	42	P. & F. Evans & Co.
Belgium,	12	Beresford & Co.
,,	41	Arnati & Harrison

Turmeric

Cochin,	121 pks.	L. & I. D. Jt. Co.
China,	95	G. & H. Green

Farina—

Germany,	200 pks.	Hernu, Peron, & Co.
,,	50	H. Lambert
,,	100	Prop. Scott's Wf.
Holland,	250	Seaward Bros.
,,	300	J. Anderson & Co.
,,	25	J. Knill & Co.
Austria,	80	Brasch & Rothenstein

Glucose—

U. S.,	500 pks.	500 c.	J. Barber & Co.
,,	40	240	L. Sutro & Co.
,,	500	500	L. Norman & Co.
,,	2,500	2,500	J. Forsey
,,	800	1,050	R. G. Hall & Co.
,,	200	200	Union Lith. Co.
,,	500	500	J. Barber & Co.
,,	25	130	Fellows, Morton & Co.
,,	23	125	Hyde, Nash & Co.
Germany,	25	226	Prop. Chmbln's Wf.
,,	100	100	J. Barber & Co.
U. S.,	250	1,405	F. J. Warren
,,	100	550	Prop. Chmbln's Wf.
France,	200	200	Weatherley & Co.
,,	200	200	L. Norman & Co.
,,	400	400	Trier, Meyer & Co.
U. S.,	2,750	2,750	Beresford & Co
,,	50	279	Prop. Scott's Wf.

Manganese—

N. Z.,	230 t.	W. A. Sparrow

Manure—

Germany,	11 t.	A. Zumbeek & Co
France,	260 t.	J. B. White & Bros., Ltd.

Naphtha—

Belgium,	30 drs.	Stein Bros.
Germany,	10 cks.	Elkan & Co.

Ochre—

Holland,	18 pks.	Phillipps & Graves
France,	5 cks.	Stobbs, Wilson, & Co.
,,	60	W. Harrison & Co.

Painters' Colours—

France,	5 pks.	Flageollet & Co.
,,	2	Bennett S.S. Co.
Germany,	1	Craven & Co.
Holland,	2	J. L. Lyon & Co.
,,	22	T. H. Lee
U. S.,	100	O. Melvin
,,	200	M. Ashby, Ltd.
Holland,	14 cks.	R. Balli & Co.
Germany,	16	Brandraem Bros.
,,	15 pks.	L. & I. D. Jt. Co.
,,	26 cks.	Charles & Fox
,,	3 pks.	Phillipps & Graves
Holland,	1	J. Owen
Germany,	3	T. H. Lee
,,	40	G. Steinhoff
Belgium,	3	J. B. Orr & Co., Ltd.

Paraffin Wax—

Rangoon,	857 cs.	H. Hill & Son
U. S.,	327 brls.	,, ,,
,,	122	McDougal & Bouthron
,,	2,000	J. H. Usmar & Co.

Phosphate Rock—

Belgium,	215 t.	W. Gould & Co.
,,	210	Lawes Mnre. Co., Ltd.
,,	215	A. Hunter & Co.
U. S.,	5900	Wylie &
,,	205	Anglo-Cntl.
Holland,	50	Lawe's Man

Pitch—

Germany,	4 cks.	Stobbs, W
France,	120	H. Hill

Plumbago—

Italy,	50 bgs.	G. Su
Germany,	22 cks.	R. Warner
Ceylon,	167 brls.	H. W

Potassium Bicarbonate—

Holland,	11 pks.	A. & M. Z

Potassium Bromide—

U. S.,	40 pks.	B. & N. W
,,	20	A. F. White

Potassium Carbonate—

Holland,	400 c.	Spies, Bros.
France,	200	Charles
,,	60	J. A
Holland,	19 cks.	Magee,

Potassium Sulphate—

Germany,	305 pks.	T. Farmer

Quicksilver—

Italy,	800 btls.	L. & I. D.

Salammoniac—

Germany,	6 pks.	Howards

Saltpetre—

Germany,	25 cks.	Craver

Sodium Acetate—

France,	9 pks.	S. F. Water
Belgium,	16	Lister &
,,	8	Magee, Taylor
,,	8	Sawer, Mead

Sodium Silicate—

Germany,	34 pks.	Beresford

Sugar of Lead—

Holland,	58 pks.	Beresford

Tartaric Acid—

Holland,	6 pks.	W. C. Bacon
,,	14	N.
,,	12	Middleton

Ultramarine—

Belgium,	2 brls.	Leach

Verdigris—

France,	2 cks.	B. & F.

White Lead—

Holland,	12 brls.	Brasch &
,,	18 cks.	A. & M. Z
Germany,	26	H.
Belgium,	25 brls.	Leach
Holland,	54 cks.	T. & W.
,,	27	Burrell
France,	43	W. Harrison
Germany,	26	Randa

ide—
50 brls. H. Hodson & Co.
182 pks. M. Ashby, Ltd.
20 brls. J. Owen
500 cks. Soundy & Sons
phate—
32 pks. F. Smith

VERPOOL.

ending January 28th.

59 cks.
, 6
cid—
n, 20 btls.
—
125 cks.
Sulphate—
20 bgs.
ls *(otherwise undescribed)*
45 cks. Co-op. W'sale Soc.
Precipitate—
1,999 bgs.
Pyrites—
130 t.
f Tartar—
, 4 cs.
a, 10 cks,
a, 3
s *(otherwise undescribed)*
72 cs. E. Chesney & Co.
s—
neal
ry, 6 bgs. Bruce & White
0
460 bls. 600 bgs.
ia
371 bgs. Papayanni & Jeremias
280 A. C. Cozzifachi
475
151
33
762
—
k, 705 brls.
land 1,120 t. Houlder Bros. & Co.
ths—
de de Sul 8,600 Reiniers & Loessel
ese Ore—
urg, 234½ t. Macqueen Bros.
20, 1,045 t. Wigan Coal & Iron Co.
ena, 1,500 " "
240 Macqueen Bros.
ate—
ina, 1,600 t. Gt. West'n Ry. Co.
, 300 Phospho.-Guano Co.

Phosphate Rock—
Savannah, 700 t.
New York, 47 bgs.
Phosphate of Lime—
Lisbon, about 310 t. Phospho.-Guano Co.
Pitch—
Amsterdam, 26 cks.
Plumbago—
Genoa, 80 bgs.
Potash—
Portland, 13 brls. Makin & Bancroft
Rouen, 27 cks. Co-op. W'sale Soc.
Potassium Prussiate—
Rotterdam, 4 cks.
Pyrites—
Huelva, 1,062 t. Matheson & Co.
Pyrites Sulphate—
Huelva, 1,086 t. " "
Saltpetre—
Hamburg, 71 pks.
Kurrachee, 209 bgs. Bell Bros. & Thompson
Soap—
Bari, 251 cs. 192 bxs.
SodaAsh—
Rouen, 4 cks. Co-op. W'sale Soc.
Stearine—
Antwerp, 25 bgs.
New York, 500 tcs.
Tartar—
Bordeaux, 12 cks.
Ancona, 4
Tartaric Acid—
Rotterdam, 5 cks.
Ultramarine—
Antwerp,, 2 brls. J. T. Fletcher & Co.
Rotterdam, 5 cks. 36 cs.
Verdigris—
Bordeaux, 2 cks.
Zinc Ashes—
Boston, 165 brls.
Zinc Oxide—
Antwerp, 10 brls. 25 cks.
Zinc White—
Amsterdam, 3 cks.
Rotterdam, 120

GLASGOW.

Week ending January 28th.

Aluminium—
Antwerp, 30 css.
Barytes—
Rotterdam, 46 cks.
Chemicals *(otherwise undescribed)*
Rotterdam, 1 cs. Jas. Rankine & Son
Hamburg, 5 cks.
Chlorate of Manganese—
Rotterdam, 1 ck. J. Rankine & Son

Dyestuffs—
Alizarine
Rotterdam, 50 cks.
Annatto
Bordeaux, 1 ck.
Farina—
Rotterdam, 61 bgs.
Glucose—
New York, 100 brls.
Nitro-naphthaline—
Rotterdam, 1 kg. J. Rankine & Son
Ochre—
Marseilles, 90 cks.
Phosphate of Lime—
Antwerp, 1,260 bgs.
Potash—
Dunkirk, 16 cks.
Potassium Prussiate—
Hamburg, 36 cks.
Tar—
Marseilles, 48 cks.
New York, 636 brls.
White Lead—
Rotterdam, 36 cks.
Zinc Oxide—
Antwerp, 50 cks.
Zinc White—
Rotterdam, 55 cks. J. Rankine & Son
Hamburg, 31

TYNE.

Week ending January 23rd.

Alum Earth—
Hamburg, 18 cks. Tyne S. S. Co.
Glucose—
New York, 25 brls. Furness, Withy & Co.
Rotterdam, 60 bgs. Tyne S. S. Co.
Zinc Oxide—
Antwerp, 10 brls. Tyne S. S. Co.

HULL.

Week ending January 21st.

Acid—
Rotterdam, 8 cks. W. & C. L. Ringrose
Alkali—
Holland, 8 cks. Zeeland S. S. Co.
Barytes—
Antwerp, 44 cks.
Cellulose—
Hamburg, 1,020 bales Wilson, Sons & Co.
Chemicals *(otherwise undescribed)*
Dunkirk, 44 pks. 2 cks. Wilson, Sons & Co.
Bremen, 2 Veltmann & Co.
Hamburg, 10 8 Wilson, Sons & Co.
Antwerp, 21 Wilson, Sons & Co.

Cream of Tartar—
Rotterdam, 1 ck. W. & C. L. Ringrose
Dyestuffs—
Alizarine
Rotterdam, 16 cks. 15 pks. W. & C. L. Ringrose
" 5 brls. G. Lawson & Sons
Madder
Rotterdam, 1 ck. J. Pyefinch & Co.
" 2 Hutchinson & Son
Farina—
Stettin, 575 bgs. Wilson, Sons & Co.
Ghent, 80 bxs.
Glucose—
Rouen, 10 cks. Rawson & Robinson
New York, 250 brls. Wilson, Sons & Co.
Phosphate—
Ghent, 260 t.
Saltpetre—
Hamburg, 5 brls.
Soap—
Boston, 525 pks.
Hamburg, 1 css. Wilson, Sons & Co.
Tartar—
Bordeaux, 4 cks. Rawson & Robinson
Ultramarine—
Rotterdam, 5 css. Hutchinson & Son
White Lead—
Antwerp, 99 cks. Bailey & Leetham
Rotterdam, 5 J. T. Seddon
" 10 T. Fewster

GRIMSBY.

Week ending January 16th.

Chemicals *(otherwise undescribed)*
Hamburg, 38 pks.
Farina—
Hamburg, 95 bgs.
Zinc Ashes—
Antwerp, 34 cks.

GOOLE.

Week ending January 13th.

Dyestuffs *(otherwise undescribed)*
Boulogne, 50 cks. 4 css.
Alizarine
Rotterdam, 14 cks.
Glucose—
Dunkirk, 680 bgs.
Calais, 400
Potash—
Calais, 9 cks. 46 dms.
Dunkirk, 26 40
Saltpetre—
Rotterdam, 270 bgs.
Waste Salt—
Hamburg, 300 cks.

EXPORTS OF CHEMICAL PRODUCTS

OF

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

ending January 27th.

, 7 c. £10
ile, 26 t. 14 c. £94
12 5
3 t. 15 c. £21
, 35 9 193
ake—
e, 80 t. 6 c. £144
ia (Liquid)—
orf, 2 clydes. £20

Ammonium Carbonate—
Dunkirk, 18 c. £26
Melbourne, 11 cs. 21
Bordeaux, 1 t. 3 32
Ammonium Sulphate—
Hamburg, 50 t. £505
Ghent, 90 945
Martinique, 179 1,969
Amsterdam, 50 525
Canaria, 2 23
Bordeaux, 21 18 c. 82
Maderia, 1 11
Demerara, 100 4 1,145
Arsenic—
New York, 8 t. 11 c. £163
Lisbon, 5 cks. 13
Adelaide, 12 7

Bone Ash Superphosphate—
Mauritius, 187 t. 17 c. £750
Borax—
Ghent, 4 c. £12
Carbolic Acid—
Boston, 2 t. 10 c. £90
Carbolic Acid Crystals—
Santos, 2 cks. £8
Hiogo, 2 t. 5 c. 104
Rotterdam, 49 cks. 138
Carbonic Acid Gas—
Bordeaux, 15 tubes £43
Carbon Bisulphide—
Adelaide, 10 c. £11
Caustic Potash—
Tangiers, 10 c. £12
Adelaide, 1 t. 1 66

Caustic Soda—
Dunedin, 1 t. 2 c. £24
Lisbon, 43 7 378
New York, 3 2
Odessa, 53 5 545
Natal, 1 13 30
Chemicals *(otherwise undescribed)*
Adelaide, 10 cks. £35
Algoa Bay, 4 cs. 16
Trinidad, 6 11
Calcutta, 14 pks. 41
Champion Bay, 12 26
Shanghai, 4 20
Bangkok, 2 15
Natal, 41 35
Melbourne, 10 38
Vigo, 2 c. 16
Rosario, 33 126
Bombay, 1 25

Citric Acid—
Melbourne, 1 c. £11
Bombay, 2 17
Amsterdam, 3 kgs. 23
Rotterdam, 2 17
Hamburg, 7 2 cks. 124
Piræus, 2 15
Constantinople, 2 16
Genoa, 12 0 6 449
Brussels, 15 106

Coal Products—

Aniline Oil
Ghent, 2 drs. £80
Hamburg, 13 puns. 450

Aniline Salts
New York, 33 pks. £300

Anthracene
Dusseldorf, 175 cks. £2,239

Benzol
Calais, 19 puns. £380
Rotterdam, 29 13 drs. 621

Coal Tar (Extract)
Dunkirk, 2 dms. £9

Naphtha
Rotterdam, 10 puns. 171 rnlts 670
Treport, 50 150

Paraffin Wax
Cape Town, 112 drs. £120
Beypore, 15 cs. 12

Pitch
Dunkirk, 582 t. £990
Melbourne, 44 pks. 31
St. Nazaire, 911 1,550

Tar
Melbourne, 11 rnlts. £6
Natal, 20 12

Tar Oil
Terneuzen, 100 cks. £65

Copperas—
Salonica, 18 t. 15 c. £48

Copper Sulphate—
Treport, 2 4 £35
Rotterdam, 4 19 70
Odessa, 3 2 43
Algoa Bay, 18 15
Salonica, 6 14 93
Bordeaux, 59 3 839
Paris, 5 3 71

Cream of Tartar—
Adelaide, 2 t. 5 c. £226
Auckland, 1 10 142
Melbourne, 3 278

Disinfectants—
Sydney, 27 cs. £122
Tuntsin, 2 12
Hong Kong, 100 drs. 100
San Francisco, 26 pks. 27

Guano—
Guadeloupe, 200 t. £2,000
Demerara, 20 205
Jersey, 20 200

Manure—
Orotava, 5 t. 13 c. £52
Demerara, 50 500
Ghent, 90 990
Oporto, 1 10
Rochefort, 100 427
Bordeaux, 95 420
Barbardoes, 10 80
Antigua, 15 115
Martinique, 148 12 464
Cape Town, 10 30
St. Lucia, 155 1,292
Hamburg, 220 2,420
Jersey, 471 3 3,273
Melbourne, 6 33

Mercury Bichloride—
Hamburg, 1 ck. £77

Mirbane—
Paris, 10 drs. £18
Calais, 4 css. 110 207
New York, 10 pks. 225
Sydney, 10 48

Muriatic Acid—
St. Lucia, 15 carboys £10

Nitric Acid—
Jersey, 48 carboys £96

Oxalic Acid—
Melbourne, 9 c. £16
Madras, 5 10

Phosphorus—
Natal 30 brls. £83

Picric Acid—
Calcutta, 2 c. £16

Potassium Chlorate—
Cape Town, 40 kgs. £93
Shanghai, 7 cks. 32

Potassium Muriate—
Jersey, 15 t. £150
Madras, 10 105

Salammoniac—
Varna, 2 t. 5 c. £71
Melbourne, 6 10
Seville, 8 16
Salonica, 1 1 35
Bagdad, 1 2 35

Saltpetre—
Rio de Janeiro, 2 t. 7 c. £52
Gibraltar, 10 223
Adelaide, 1 21
Auckland, 10 10
Melbourne, 3 10 75
Gothenburg, 1 2 21
Bombay, 15 17
Savanilla, 2 3 47

Sheep Dip—
Natal, 200 drs. 5 c. £59
Cape Town, 3 t. 05
Calcutta, 202 pks. 35
Algoa Bay, 41 1,100 drs. 281

Soda—
Bombay, 6 c. £6
Calcutta, 5 cks. 30
Barbadoes, 10 3
Melbourne, 2 t. 4 17
Natal, 10 4
Algoa Bay, 9 3
Cape Town, 4 17 18

Soda Crystals—
Colombo, 15 c. £7
Mauritius, 1 t. 2 6
Smyrna, 1 14 6
Sydney, 10 5 35
Algoa Bay, 7 1
Trinidad, 16 3
Cape Town, 1 10 8

Sodium Bicarbonate—
Limon, 5 c. £4
Pt. Elizabeth, 4 4
Newcastle, 10 4
Natal, 10 5
Cape Town, 3 3
Trinidad, 1 t. 7

Sodium Silicate—
Natal, 6 c. 2

Sulphur—
Newcastle, 2 t. 17
Savanilla, 12 c. 8

Sulphur Flowers—
Melbourne, 1 t. 19 c. £18

Sulphuric Acid—
Natal, 55 cs. £53
Cape Town, 17 c. 10

Superphosphate—
Martinique, 375 t. £1,312

Superphosphate of Lime—
Madeira, 15 t. £46
Mauritius, 10 5 c. 14

Tartaric Acid—
Adelaide, 20 c. 116
Boulogne, 5 31
Salonica, 1 t. 5 130
Bombay, 1 7
Rotterdam, 2 12
Melbourne, 3 10 402

LIVERPOOL.

Week ending January 27th.

Alkali Waste—
Antwerp, 12 t. £50

Alum—
Lisbon, 2 t. £10
Palermo, 1 5
Callao, 3 5 c. 17
Rosario, 1 13 9
Sydney, 1 0
Singapore, 1 9 8
Bombay, 1 3 6
Calcutta, 19 16 99
B. Ayres, 7 9 39
Barcelona, 10 11 54
Alexandretta, 3 15
Valparaiso, 1 10 7

Alum Cake—
Maceio, 10 t. 4 c. £40

Ammonium Carbonate—
Antwerp, 10 c. £16
Barcelona, 1 t. 2 q. 32
Oporto, 10 16

Ammonium Chloride—
Philadelphia, 16 t. 1 q. £336
B. Ayres, 2 11 c. 3 58
New York, 3 13 77
Sydney, 3 5 70

Ammonium Sulphate—
Venice, 40 t. 17 c. 3 q. £430
Genoa, 75 9 2 834
Marseilles, 5 2 54
G. Canary, 29 10 2 327
Demerara, 163 2 3 1,801
Boston, 25 10 283
Barcelona, 30 3 1 323
Leghorn, 30 9 333
Baltimore, 24 14 275
Barbadoes, 50 620
Malaga, 50 600
New York, 50 540
Valencia, 11 125

Bleaching Powder—
Baltimore, 216 cks.
Calcutta, 100 css.
Corunna, 6 brls.
Kingsey, 19 cks.
Montreal, 31
Philadelphia, 92
S. Sebastian, 78
Boston, 627
M. Video, 7 bxs.
New York, 159 cks. 42 bxs.
Vigo, 8

Borax—
Seville, 1 t. 1 q. £30
Antwerp, 6 13 c. 199
Havana, 2 14 76
Montreal, 10 15
S. la Grande, 4 6
Alexandria, 1 10 42
Piræus, 2 3 5
Hamburg, 2 13 1 81
Callao, 20 cks. 60

Borate of Lime—
Rotterdam, 10 t. 6 c. 2 q. 138

Brimstone—
Philadelphia, 50 t. 2 c. £260
Quebec, 15 83
Calcutta, 7 10 46
Boston, 196 10 1,020
B. Ayres, 3 15 29

Carbolic Acid—
Dunkirk, 10 t. 14 2 q. £502
Hamburg, 2 1 7
New York, 3 t. 2 150

Caustic Potash—
Chicago, 10 c. £11
Melbourne, 2 t. 5 45

Caustic Soda—
Callao, 60 dms.
Corunna, 8 brls.
Hamburg, 6
Malta, 27
M. Video, 50
Montreal, 10
Para, 6
Philadelphia, 25 cks.
S. Cruz, 10
Seville, 50
Valencia, 100
Nantes, 35
Naples, 106
N. York, 1,200 1 brl. 20 bxs.
Pasages, 100
P. Cabello 30
Rosario, 20
Rotterdam, 8
S. Sebastian 150
Santander, 32
Sydney, 60
Yokohama, 850
Amst'rd'm, 100
Bari, 38
Boston, 550
Ancona, 20
Bahia, 25
Baltimore, 135 brls.
Barcelona, 1,240 72
Batavia, 13
Bilbao, 162
Ceara, 30
Genoa, 157
Jaffa, 60
Kobe, 200
La Guayra, 40
Maceio, 60
Madrid, 91
Messina, 50

Chemicals *(otherwise undesc*
Marseilles, 17 c. 1
Genoa, 10
Leghorn, 1 t.

Citric Acid—
Valparaiso, 13 c. 1

Citrate of Magnesia—
Madeira, 2 c.

Copperas—
Rio de Janeiro, 3 t. 1 c.
Kurrachee, 13 4
Alexandria, 8 1

Copper Sulphate—
Genoa, 12 t. 1 c.
B. Ayres, 10 2 1 q.
Rio de Janeiro 7 3
Nantes, 5 12
Barcelona, 29 10 3
Bordeaux, 117 1 3
Rouen, 117 17
Tarragona, 19 19
Venice, 42 2 1
Leghorn, 29 9 1
Sydney, 3
Marseilles, 194 13 2

Disinfectants—
Rangoon, 10 c.

Guano—
Valencia, 29 t. 2 q.

Manure—
St Vincent, 120 bgs.
Genoa, 882 t. 13 c. 1 q.
G. Canary, 20
Havre, 150 2 2
Valencia, 48 28 1

Magnesium Chloride—
Hamburg, 1 c.
Bangkok, 15 1 q.

Oxalic Acid—
Genoa, 5 t. 17 c.

Picric Acid—
New York, 1 t. 5 c.

Potash—
Para, 6 c

Potassium Bichromate—
Rio de Janeiro, 1 t. 2 c.
Constantinople, 11 c. 1 q.

Potassium Carbonate—
Vigo, 1 t. 2 c.
Chicago, 6 15

Potassium Chlorate—
Gothenburg, 10 c.
New York, 15 t.
N. Orleans, 1
Odessa, 1 10
Hiogo, 30
Genoa, 1 5
Hamburg, 1
Antwerp, 2
Naples, 10
Kobe, 5
Vera Cruz, 1 5
Yokohama, 10

Salt—
E. London, 44 t.
Ghent, 80
Hamburg, 229
Kansas City, 65
Lagos, 200
Melbourne, 25
N. Orleans, 450
Opobo, 75
Para, 50
Pt. Natal, 351
Valparaiso, 200 cs.
Boston, 605
Gd. Bassa, 10
Melbourne, 150
P'rtland (O.) 95
Rouen, 10
Salt Pond, 37½
Sydney, 99 19 c.
Amst'rdam, 220
Antwerp, 50
Axim, 5
Chicago, 130
Chittagong, 2,738
Coquimbo, 200

Salammoniac—
Smyrna, 2 t. 13 c. 1 q.
Portland, Me., 1 3
Trieste, 1 10
C'nst'ntin'ple, 1 3
Genoa, 2 16

—
30 t. £80
135 355

—
, 5 t. 1 c. 1 q. £90
, 1 19 43
5 6
4 3 7
10 10
5 104
11 3 13
7 17 385
10 11

p—
1 t. £40
21 13 c. 3 q. 20 cks. 818
2 16 c. 1 q. 125

950 bxs.
200
100 pks.
30
300
548 60 csk
60
30
15
M., 400
300
40
18,530
y, 300
un., 100
, 1,000
625 30 4 cks.
324
81 20 pks.
,9,512
20
, 206
224
a, 60
, 300
40
60
y, 1705
600
10 dms.
500
1
nople, 300
20
350
, 1,575
50
30
15
50
477
1

h—
, 154 cks.
17
226 258 tcs.
100
15
25 10 brls.
60
264
70
128
11
10
k, 377 2119
hia, 272
, M., 124
30, 60

lkali—
a, 70 brls.
30
inople, 35
35
abeth, 20 20 kgs.
60
45

ystals—
320 brls.
3 50 kgs.
g, 50 bgs.
100
100
25
25

Biborate—
d, Me., 3 t. 3 c. £95
s, 9 8 3 q. 283

Bicarbonate—
500 kgs.
5 cks. 80
40

Naples, 70
Piræus, 10
Rotterdam 50
Seville, 4 20
Antwerp, 20
Barcelona, 500
Bombay, 310
Bordeaux, 60
B. Ayres, 50 50
Kurachi, 09
M. Video, 50
Nantes, 30

Sodium Bichromate—
Genoa, 8 t. 2 c. £192

Sodium Chlorate—
Genoa, 10 c. £30
Hamburg, 1 t. 59
Antwerp, 10 30

Sodium Nitrate—
Lisbon, 30 t. 2 c. 2 q. £290
Santander, 1 2 10

Sodium Silicate—
Salonica, 10 brls.
Barcelona, 17 cks.
Lisbon, 32
Melbourne, 50

Sodium Stannate—
Bahia, 2 kgs.

Sugar of Lead—
Calcutta, 1 t. 16 c. £44

Sulphur—
Rouen, 70 t. 10 c. £407
Para, 10 2 q. 5
Rio de Janeiro, 13 1 6

Superphosphate—
Nantes, 85 t. 2 c. 2 q £168

Zinc Chloride—
Halifax, 1 t. £16

GLASGOW.

Week ending January 28th.

Ammonium Sulphate—
Demerara, 165 t. 19 c. £1,709
Nantes, 121 3¾ 1,225

Bleaching Powder—
Calcutta, 6 t. 1 c. £50

China Clay—
B. Ayres, 103 t. 16¾ c. £175

Chloride of Lime—
Demerara, 2 t. ½ c. £25

Coal Naphtha—
Rouen, 30 t. 9¾ c. £485

Coal Tar—
Bombay, 10 t. 10 c. £32

Coal Tar Pitch—
Bombay, 34 t. 10 c. £86
Spain, 351 11¾ £580
Santander, 1010 1 £1,666

Dyestuffs—
Extracts
Boston, 19 c. £32 15s.

Epsom Salts—
Halifax, 5 t. 10 c. £44
Rouen, 5 17¾ 27

Manure—
Straits, 50 t. £400
Demerara, 218 14¾ c. 4 lbs. 2 095
Rouen, 12 £80

Paraffin Wax—
Japan, 16 t. 12¾ c. £520
Rouen, 814¾ 1,387
Nantes, 76 12 2,304

Painters' Colours—
Hong Kong, 1 t. 4 c. £22
Japan, 4½ 70
Halifax, 20¾ 25

Potassium Bichromate—
Japan, 54¼ c. £88
Antwerp, 5 t. 16½ 150
Nantes, 2 17¾ 95
Rotterdam, 25 cks. 350

Salt Cake—
Antwerp, 244 t. 16¾ c. £490

Soda Ash—
Baltimore, 20 t. £195

Sulphur—
Demerara, 7 t. 12½ c. £58

White Lead—
Cape Colony, 4 t. 6½ c. £88
Natal, 3 t. 70

HULL.

Week ending January 19th.

Bleaching Powder—
Bremen, 4 cks.

Calcium Sulphate—
Bergen, 20 sks.
Harlingen, 600 bgs.

Caustic Soda—
Danzig, 50 dms.
Libau, 288
Odessa, 24

Chemicals *(otherwise undescribed)*
Antwerp, 34 pks.
Alexandria, 12 cs.
Bremen, 2
Copenhagen, 1 1 cks. 3
Christiania, 20
Constantinople, 50
Danzig, 22 60
Ghent, 12
Gothenburg, 5 50
Hamburg, 405 5 84
Harlingen, 10
Libau, 134
New York, 50 900
Odessa, 21 40
Reval, 85 60
Rotterdam, 10 1
Stettin, 20

Coal Tar Pitch—
Amsterdam, 76 c.

Cotton Seed Oil—
Antwerp, 669 c.
Amsterdam, 119
Alexandria, 267
Bremen, 51
Copenhagen, 20
Christiania, 20
Flushing, 430
Rotterdam, 2,963
Stettin, 161

Creosote—
Constantinople, 18 cks.

Dyestuffs *(otherwise undescribed)*
Antwerp, 2 dms.
Hamburg, 1 cs.
Rouen, 1 3 cks.

Linseed Oil—
Alexandria, 90 c.
Christiania, 251
Hamburg, 34

Manure—
Dunkirk, 1,011 bgs.
Ghent, 1,000
Hamburg, 1,146
Rotterdam, 658

Naphthaline—
Riga, 114 bgs.

Ochre—
Rotterdam, 1 ck.

Painters' Colours—
Antwerp, 4 cs. 30 cks.
Amsterdam, 31
Alexandria, 2 pks.
Copenhagen, 2 10
Christiania 20 dms.
Constantinople, 20 pks.
Flushing, 9
Ghent, 1
Gothenburg, 1
Hamburg, 4
Hango, 10
Odessa, 234
Riga, 6
Rotterdam, 1 1

Pitch—
Antwerp, 259 t.

Soap—
Copenhagen, 6 cs.

Tar—
Alexandria, 5 cks.
Copenhagen, 100

Varnish—
Antwerp, 5 cs. 1 ck.
Amsterdam, 3
Copenhagen, 1
Flushing, 5

TYNE.

Week ending January 23rd.

Alkali—
Rotterdam, 18 c.
Savona, 255
New York, 988

Ammonium Sulphate—
Dunkirk, 1,000 c.
Valencia, 1,140
Genoa, 1,400

Barytes—
Dunkirk, 210 c.

Barytes Carbonate—
New York, 300 c.

Bleaching Powder—
Lisbon, 101 c.
Dunkirk, 401
Rotterdam, 909
Copenhagen, 139
Gothenburg, 203
Christiania, 550

Caustic Soda—
Valencia, 261 c.
Copenhagen, 29
Rotterdam, 285
New York, 1,366

Gypsum—
New York, 1,482 c.

Manure—
Jersey, 5,541 c.
Savona, 19

Soda Ash—
Gothenburg, 533 c.
Christiania, 230
Lisbon, 418

Sodium Hyposulphite—
Genoa, 40 c.

Sodium Sulphate—
Copenhagen, 212 c.

Sulphur—
Dunkirk, 100 c.

Sulphate of Phosphate—
Valencia, 121 c.

Superphosphate—
Savona, 381

White Lead—
Gothenburg, 25 c.

GOOLE.

Week ending January 13th.

Bleaching Powder—
Ghent, 30 cks.

Coal Products—
Ghent, 30 cks.
Rotterdam, 93

Dyestuffs *(otherwise undescribed)*
Boulogne, 1 ck. 40 dms.
Ghent, 21
Hamburg 2

Manure—
Ghent, 20 bgs.

Naphtha—
Treport, 26 cks.

Pitch—
Antwerp, 844 t.

GRIMSBY.

Week ending January 16th.

Chemicals *(otherwise undescribed)*
Antwerp, 13 cks. 104 pks.
Dieppe, 20 233
Hamburg, 82 5 cks. 200 bgs.
Malmo, 20
Rotterdam, 4 dms.

Coal Products—
Dieppe, 123 cks.

Dyestuffs—
Dieppe, 5 cs.

Salt—
Faroe Islands, 60 t.

PRICES CURRENT.

WEDNESDAY, FEBRUARY 3, 1892.

PREPARED BY HIGGINBOTTOM AND CO., 116, PORTLAND STREET, MANCHESTER.

The values stated are F.O.R. at maker's works, or at usual ports of shipment in U.K. The price in different localities may vary

	£	s.	d.
Acids:—			
Acetic, 25 °/₀ and 40 °/₀ .. .. per cwt.	7/- & 11/-		
,, Glacial .. .. ,,		50/-	
Arsenic, S.G., 2000° .. .. ,,	0	13	6
Fluoric .. .. per lb.	0	0	3¾
Muriatic (Tower Salts), 30° Tw. .. .. .. per bottle	0	0	10
,, (Cylinder), 30° Tw. .. .. ,,	0	3	0
Nitric 80° Tw. .. .. per lb.	0	0	2¼
Nitrous .. .. ,,	0	0	1¾
Oxalic .. .. nett ,,	0	0	3⅛
Phosphoric, 1750° .. .. ,,	0	0	11½
Picric .. .. ,,	0	0	10¼
Sulphuric (fuming 50 °/₀) .. .. per ton	15	10	0
,, (monohydrate) .. .. ,,	5	10	0
,, (Pyrites, 168°) .. .. ,,	3	5	0
,, (,, 150°) .. .. ,,	1	5	0
,, (free from arsenic, 145°) .. .. .. ,,	1	7	6
Sulphurous (solution) .. .. ,,	2	15	0
Tannic (pure) .. .. per lb.	0	1	2
Tartaric .. .. ,,	0	1	1
Arsenic, white powdered .. .. nett per ton	11	5	0
Alum (loose lump) .. .. ,,	5	5	0
Alumina Sulphate (pure) .. .. ,,	5	0	0
,, ,, (medium qualities) .. .. ,,	4	15	0
Aluminium .. .. per lb.	2s. 8d. to	0	3 2
Ammonia, ·880=28° .. .. per lb.	0	0	3
,, =24° .. .. ,,	0	0	1¾
,, Carbonate .. .. nett ,,	0	0	3½
,, Muriate .. .. per ton	21	0	0
,, ,, (sal-ammoniac) 1st & 2nd .. per cwt.	35/- & 33/-		
,, Nitrate .. .. per ton	40	0	0
,, Phosphate .. .. per lb.	0	0	10½
,, Sulphate (grey), London .. .. .. per ton	10	12	6
,, ,, (grey), Hull .. .. ,,	10	12	6
Aniline Oil (pure) .. .. per lb.	0	0	8¼
Aniline Salt ,, ... ,,	0	0	7
Antimony .. .. per ton	70	0	0
,, (tartar emetic) .. .. per lb.	0	1	0
,, (golden sulphide) .. .. ,,	0	0	10
Barium Chloride .. .. per ton	7	15	0
,, Carbonate (native) .. .. ,,	3	10	0
,, Sulphate (native levigated) .. .. .. ,,	45/- to	75/-	
Bleaching Powder, 35 % .. .. nett ,,	7	10	0
,, Liquor, 7 % .. .. ,,	2	10	0
Bisulphide of Carbon .. .. ,,	11	15	0
Chromium Acetate (crystal .. .. per lb.	0	0	6
Calcium Chloride .. .. per ton	2	5	0
China Clay (at Runcorn) in bulk .. .. .. ,,	17/6 to	35/-	
Coal Tar Dyes:—			
Alizarine (artificial) 20 % .. .. per lb.	0	0	8¾
Magenta .. .. ,,	0	3	9
Coal Tar Products			
Anthracene, 30 % A, f.o.b. London .. per unit per cwt.	0	1	2½
Benzol, 90 % nominal .. .. .. per gallon	0	2	3
,, 50/90 ,, ... ,,	0	1	9
Carbolic Acid (crystallised 40°) .. .. .. per lb.	0	0	5⅛
,, (crude 60°) .. .. per gallon	0	1	2
Creosote (ordinary) .. .. ,,	0	0	1
,, (filtered for Lucigen light) .. .. .. ,,	0	0	2
Crude Naphtha 30 % @ 120° C. .. .. .. ,,	0	1	0
Grease Oils, 22° Tw. .. .. per ton	2	5	0
Pitch, f.o.b. Liverpool or Garston .. .. .. ,,	1	14	0
Solvent Naphtha, 90 % at 160° .. .. .. per gallon	0	1	2
Coke-oven Oils (crude) .. .. ,,	0	0	3
Copper .. .. per ton	44	5	0
,, Sulphate .. .. ,,	14	15	0
,, Oxide (copper scales) .. .. ,,	45	0	0
Glycerine (crude) .. .. ,,	13	0	0
,, (distilled S.G. 1250°) .. .. ,,	45	0	0
Iodine .. .. nett, per oz.	0	0	9
Iron Sulphate (copperas) .. .. per ton	1	12	6
,, Sulphide (antimony slag) .. .. ,,	2	0	0
Lead (sheet) for cash .. .. ,,	11	15	0
,, Litharge Flake (ex ship) .. .. ,,	15	0	0
,, Acetate (white ,,) .. .. ,,	25	15	0
,, ,, (brown ,,) .. .. ,,	17	10	0
,, Carbonate (white lead) pure .. .. .. ,,	20	0	0
,, *Nitrate* .. .. ,,	20	10	0
Lime, Acetate (brown) .. .. per ton	6	17	6
,, ,, (grey) .. .. ,,	10	0	0
Magnesium (ribbon and wire) .. .. per oz.	0	2	3
,, Chloride (ex ship) .. .. per ton	2	7	6
,, Carbonate .. .. per cwt.	1	17	6
,, Hydrate .. .. per ton.	17	0	0
,, Sulphate (Epsom Salts) .. .. .. per ton	3	0	0
Manganese, Sulphate .. .. ,,	18	0	0
,, Borate .. .. per cwt.	2	15	0
,, Ore, 70 % .. .. per ton	4	5	0
Methylated Spirit, 61° O.P. .. .. per gallon	0	2	6
Naphtha (Wood), Solvent .. .. ,,	0	4	6
,, ,, Miscible, 60° O.P. .. .. .. ,,	0	4	11
Oils:—			
Cotton-seed .. .. per ton	19	10	0
Linseed .. .. ,,	20	0	0
Lubricating, Scotch, 890°—895° .. .. .. ,,	7	5	0
Petroleum, Russian .. .. per gallon	0	0	4½
,, American .. .. ,,	0	0	5½
Potassium (metal) .. .. per oz.	0	3	7
,, Bichromate .. .. per lb.	0	0	5¾
,, Carbonate, 90% (ex ship) .. .. .. per ton	18	15	0
,, Chlorate .. .. per lb.	0	0	5¾
,, Cyanide, 98% .. .. ,,	0	2	2
,, Hydrate (Caustic Potash) 80/85 % .. per ton	22	15	0
,, ,, (Caustic Potash) 75/80 % .. ,,	21	5	0
,, ,, (Caustic Potash) 70/75 % .. ,,	20	15	0
,, Nitrate (refined) .. .. per cwt.	1	2	6
,, Permanganate .. .. per cwt.	3	10	0
,, Prussiate Yellow .. .. per lb.	0	0	10¼
,, Sulphate, 90 % (ex ship) .. .. .. per ton	9	15	0
,, Muriate, 80 % (do.) .. .. .. ,,	7	17	6
Silver (metal) .. .. per oz.	0	3	5½
,, Nitrate .. .. ,,	0	2	10
Sodium (metal) .. .. per lb.	0	4	0
,, Carb. (refined Soda-ash) 48 % .. nett per ton	6	2	6
,, ,, (Caustic Soda-ash) 48 % .. ,, ,,	5	5	0
,, ,, (Carb. Soda-ash) 48% .. .. ,, ,,	5	7	6
,, ,, (Carb. Soda-ash) 58 % .. .. ,, ,,	6	7	6
,, ,, (Soda Crystals) .. .. .. ,, ,,	3	9	0
,, Acetate (ex-ship) .. .. ,,	17	10	0
,, Arseniate, 45 % .. .. ,,	10	10	0
,, Chlorate .. .. per lb.	0	0	7
,, Borate (Borax) .. .. nett, per ton.	29	10	0
,, Bichromate .. .. per lb.	0	0	2¾
,, Hydrate (77 % Caustic Soda) (f.o.b.) nett pr. ton	11	5	0
,, ,, (74 % Caustic Soda) ,, ,, ,,	11	5	0
,, ,, (70 % Caustic Soda) ,, ,, ,,	10	5	0
,, ,, (60 % Caustic Soda) .. ,, ,,	9	2	6
,, ,, (60 % Caustic Soda, cream) (f.o.b.) ,,	8	17	6
,, Bicarbonate .. .. ,,	6	15	0
,, Hyposulphite .. .. ,,	7	15	0
,, Manganate, 25% .. .. ,,	9	0	0
,, Nitrate (95 %) ex-ship Liverpool .. .. per cwt.	0	9	6
,, Nitrite, 98 % .. .. per ton	30	0	0
,, Phosphate .. .. ,,	15	10	0
,, Prussiate .. .. per lb.	0	0	8
,, Silicate (glass) .. .. per ton	5	7	6
,, ,, (liquid, 100° Tw.) .. .. .. ,,	4	7	6
,, Stannate, 40 % .. .. per cwt.	3	5	0
,, Sulphate (Salt-cake) .. .. per ton.	1	17	6
,, ,, (Glauber's Salts) .. .. ,,	1	15	6
,, Sulphide .. .. ,,	7	15	0
,, Sulphite .. .. ,,	6	12	6
Strontium Hydrate, 100% .. .. ,,	8	10	0
Sulphocyanide Ammonium, 95 % .. .. per lb.	0	0	7½
,, Barium, 95 % .. .. ,,	0	0	5
,, Potassium .. .. ,,	0	0	8
Sulphur (Flowers) .. .. per ton.	10	0	0
,, (Roll Brimstone) .. .. ,,	8	0	0
,, Brimstone: Best Quality (nominal) .. ,,	6	10	0
Superphosphate of Lime (26 %) .. .. ,,	2	7	6
Tallow .. .. ,,	26	10	0
Tin (English Ingots) .. .. ,,	93	10	0
,, Crystals .. .. per lb.	0	0	6¾
Zinc (Spelter) .. .. per ton	22	15	0
,, Chloride (solution, 96° Tw.) .. .. ,,	6	15	0

THE

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CURRENT TOPICS.

MILK OR WATER?

IT is not so long ago since, in one of the back numbers of this Journal, we gave, for the benefit of those of our readers who are in the habit of using condensed milk in the place of Nature's own product, a few hints upon judging the quality of this article. Those who have hitherto found no need to act upon any of the suggestions which were contained in the paragraph to which we refer, may now perhaps be disposed to test for themselves the utility of those remarks. At any rate, in the face of the recent revelations which have been made through the agency of chemical analysis, in regard to the actual amount of milk which some of these condensed preparations contain, there can be no doubt as to the scope for experiment which is afforded those who are curious about such matters.

It is a well-known fact that the medical faculty recommend in certain cases the use of partially separated milk; and it is not strange, therefore, to find certain kinds of condensed milk which are stated to be prepared with a portion of the cream already extracted, in order to meet the recommendations of medical authorities. There is, however, a medium in all things, and when the extraction of the cream is carried to such an extent that as much as 65 per cent. of the milk fats are extracted, there comes a point when it is doubtful whether the title of condensed "milk" is not a misnomer. In accordance with the suggestion to ascertain the comparative qualities of various condensed milks by seeing how much butter each produced, it would be very interesting to see how much the sample just referred to would have yielded, after diluting the condensed product, according to the instructions usually attached to the tin. The question, however—from many aspects—is a serious one. Seemingly at present the public are in no way protected against such forms of fraud. It is generally understood that it is necessary to read between the lines when perusing trade descriptions of the composition of prepared, or tinned, edibles; and a better instance of the misleading nature of such announcements cannot be found than in the wording of the seven labels of certain brands of condensed milk, which are to be found in the subsequent columns of this issue. We are, however, pleased to find that a memorial is to be presented to the Local Government Board asking for the introduction of a measure into Parliament to enforce the use of the word "skim" or "skimmed" on any but genuine condensed milks, so that the perpetuation of frauds of this kind may be effectually precluded.

HOUSEHOLD SMOKE AND FOGS.

Although almost everyone who has taken any interest in the discussion of the smoke problem is by this time fully acquainted with the fact that, when manufacturers have been

compelled to cease the emission of black smoke, that *bête noir* fog will not have been annihilated, since household smoke plays an equally important part in the production of fog; still, anything in the shape of a trial of any practical suggestion for overcoming this evil has virtually never been attempted. The Lord Mayor has, however, recently sanctioned the idea of bearding the lion in his own den by deciding to give the use of smokeless anthracite coal in the Metropolis a fair trial.

This coal is largely used on the Continent, where an attempt is being made to pass penal laws for preventing the emission of household smoke in addition to those existing in regard to manufacturers' smoke; and it seems therefore imperative that the suitability of this same coal for household consumption in this country should be investigated. The amount of ash in this coal is small, which should render its use economical.

If the trials which are to be made prove successful, we should hardly like to say that we shall once more see the rigorous restrictions of our forefathers resuscitated, when those who burned "sea-coale" in London without first obtaining certain rights in order to do so, were liable to severe and lasting punishment; still, it is to be hoped that this attempt to introduce the use of anthracite coal, may prove to be the thin end of the wedge towards gaining the formulation of some definite conditions regarding the production of household smoke—in our large cities and towns at all events.

SOCIETY OF CHEMICAL INDUSTRY.

LONDON SECTION.

AN ordinary meeting of the section was held on Monday, February 1st, at Burlington House, Mr. T. Tyrer in the chair. The new secretary of the section, Mr. John Heron, was present, occupying the place of the late Mr. Mumford. The first paper down for reading was one of Messrs. Wanklyn and Johnstone's productions, but, owing to the non-appearance of either of the authors at five minutes past eight, was postponed in favour of a note by Mr. Watson Smith, on "The Stability of certain Nitrogen Compounds occurring in Coal Tar Pitch." Mr. Watson Smith explained that the paper was of the nature of a preliminary note, rather designed to call attention to a fact which appeared to have been somewhat overlooked, than to deal exhaustively with the subject mentioned in the title. At the time when anthracene was discovered to be commercially valuable, an idea was current that paying quantities were present in ordinary pitch, and in consequence of this belief the search for it was so keen as to lead to the asphalt being torn up in Paris with a view to its manufacture therefrom. In examining some of this asphalt, he had noticed that when the distillation of pitch was carried to the coking point, and the retort in which the operation had been performed allowed to cool, until it could be just handled, on removing the stopper a strong smell of ammonia was perceptible. On repeating the experiment without previous cooling, no evolution of ammonia was detectable. This fact had been neglected until lately, when he made the same observation on another sample. The actual production of ammonia under these circumstances was demonstrated to the meeting by the distillation of some pitch in the manner described and subsequent appeal to the sense of smell. Moisture appeared to have no part in the production of this result, as the same effect was observed when the, air finding its way to the retort during cooling, was compelled to pass through a set of purifying tubes.

In the somewhat chatty discussion which then took place, Mr. Crowder said that the residue from bone charcoal always contained nitrogen, and in answer to a question of the author's, replied that a portion of the nitrogen was evolved as ammonia; indeed, he had put up a large apparatus to obtain nitrogen from this source, and had succeeded in doing so without having recourse to the method by which an endeavour had been made to utilise the nitrogen of coke, namely, by passing steam over it. It was further remarked in the course of the discussion that cyanogen was given off when the coking stage was approached, and a crystalline sublimate produced which consisted partly of ammonia cyanide; a phenomenon, similar to that related by Mr. Watson Smith, had also been noticed in the case of Dipple's Animal Oil. Mr. Howard thought that the research should be valuable if considerable quantities of nitrogen could be obtained by the method described, or some modification of it, and elicited from Watson Smith that all the nitrogen could be expelled by the action of steam. In reply to Mr. Tyrer, the author stated that the maximum percentage of ammonia that could be produced by repeated distillation had not been as yet determined. Mr. Morrison considered it possible that ammonium sulphocyanide might be present in the distillate, and stated that he had detected it in coke.

Mr. Johnstone having now arrived, proceeded to read an account of experiments conducted by himself and Mr. Wanklyn on the "Oxidation of the Acids of the Fatty Series," which he feared would be somewhat incomplete on account of the absence of his collaborator. As much information could be gathered, the method of experiment consisted in the oxidation of various fatty acids with an alkaline solution of permanganate of potash, and the most notable result was the production by this means of a substance derived from isobutyric acid, to which was assigned the formula $C_4H_6O_2$, and the somewhat alarming title of "aldeisobutyr." Such claims to originality as it might possess were demolished in the ensuing discussion by Mr. Hamilton, who showed from the author's own numbers that there was every reason for supposing the substance identical with the well-known body hydroxyisobutyric acid. A somewhat desultory conversation then took place between Dr. Alder Wright, the reader of the paper, Mr. Cresswell and others chiming in at intervals, on the constitution and name of the alleged new body, the feeling being general that the use of the prefix "alde" for a substance of this character was altogether illegitimate.

All things considered, the meeting was decidedly less brilliant than those to which members of the section are accustomed, but notice is given of several papers for the next few meetings, which should be of interest sufficient to atone for any temporary shortcomings.

MANCHESTER SECTION.

The last meeting of this section was held on Friday, February 5th, in the rooms of the Chemical Club, at 7 p.m., Ivan Levinstein in the chair. The Chairman opened the meeting by introducing the subject which was brought up for discussion at the last meeting, viz., the action of the Corporation in applying the by-laws of 1890 and 1891 in reference to the construction of domestic and public buildings and chemical plant. He pointed out that if the Corporation intended to interpret the word building as including chemical plant, much trouble would be inflicted on the chemical and allied industries. The Secretary read a letter which the Council of the Society had addressed to the Corporation, asking for a definition of the word building as used in their by-laws. The chairman said he considered the by-laws were good in themselves, providing the word building was not interpreted in such a wide sense as to apply to all kinds of chemical plant. Messrs. Grimshaw and Fisher spoke briefly to the same effect, they being of the opinion that the Corporation, and the framers of the by-laws never intended the word building to be subjected to such a comprehensive interpretation, and that the Corporation would cause inconveniences which manufacturers would suffer if they had to submit the details of new processes, in a sense, public property, before they could construct new plant, &c. Mr. Terry then moved the following resolution, which was seconded by Dr. Schunck: "In the opinion of this meeting of the Manchester section of the Society of Chemical Industry, annoyance will be caused and an injury inflicted upon persons in the chemical and allied industries if the by-laws of the Manchester Corporation of 1890 and 1891, referring to new buildings and the construction of public and domestic buildings, be interpreted by the Corporation as applying also to chemical plant."

Mr. Wilson then showed a handy little apparatus made by himself for collecting distillates under a vacuum in laboratory experiments, more particularly for the distillation of aniline. He was followed by Dr. Weber, who made a few explanatory remarks in reference to a statement made in his recent paper upon "Lake Pigments."

The chairman now called on Mr. Lowe, F.I.C., to read his paper, which consisted of a number of laboratory notes. Chief among these was a method for the estimation of zinc as sulphide, which the author in a number of analyses of zinc blende had obtained results differing by less than 0·2%, 36 out of this 68 differing by less than 0·1%. The chief point in the scheme of analysis, was, that the author found, on boiling, the precipitate of zinc sulphide lost its slimy nature and became granular, the precipitate on allowing to settle could be filtered through a double filter, washed, &c., and ignited in a crucible of coal gas.

Mr. Lowe then mentioned several other points of minor importance in reference to the methods of conducting assays and analyses. In discussion which followed, Mr. Bell wished to know how long the precipitate was boiled, as he had experimented in the same direction some thirty years ago, and had always as the result of his experience preferred the carbonate method. Mr. Lowe, in reply, said he had boiled briskly for 5 minutes.

e unavoidable absence of Mr. Siebold, owing to illness, Dr. Ph.D., read two short but interesting communications on mount of tannin absorbed by cotton under varying conditions," the "Chlorination of wool." It appeared that cotton absorbed n varying degrees. The longer the cotton was exposed to the f the tannin bath the greater was the amount absorbed. The f the tannin was removed on soaking the cotton subsequently in water. In reference to the action of chlorine on wool, Dr. said the few points which he had to put before them were lly the results of original research carried out by himself and ils at the Manchester Technical School. From his investi- on this subject the lecturer had brought several interesting o light, the most im-portant of which was the formation the process of excessive chlorination of a soluble substance as the property of forming insoluble lakes with the substantive

e brief discussion which followed, Mr. H. Grimshaw expressed e that at a future date Dr. Knecht would give the members of ety an opportunity of hearing a paper on mercerising. Mr. id he was very much surprised to hear so much waste in the industry had been going on for so long, and was informed by echt that dyers had been aware of the loss which they allowed s, but had hitherto very little knowledge of the extent of their n this matter. Mr. Knowles, as one practically interested, Dr. Knecht for his paper, and said he should be glad to hear f the original work the lecturer had referred to that evening at ture date. The meeting then terminated. There was an nce of about forty members.

LIVERPOOL SECTION.

sual monthly meeting of this society was held on Wednesday k, at University College, Mr. A. Norman Tate in the chair. Mr. agger read a paper on "The Manufacture and Industrial Value minium." The paper dealt with the electrolytic processes for nufacture of aluminium, referring especially to the industrial the metal thus produced, Mr. Dagger having treated of the s themselves on a former occasion. It was pointed out that um was well adapted for making fine art castings and for light work, as also for culinary utensils, possessing advantages over als commonly employed for these uses. Further, owing to the htness of the metal and its high tensible strength, it could be ed in the manufacture of scientific instruments, and of flasks, , and the like for military equipment, with marked advantage. rman Army were, in fact, now making trials of it for the latter s. A splendid set of specimens of manufactured goods made of um was shown, lent by the Cowles Syndicate Company, the lum Industry Company of Neuhausen, the Mannesmann Tube ry, and the Metal Reduction Syndicate of Patricroft. In reply al questions raised in the discussion which followed the reading paper, and in which Messrs. Thomson, E. Carey, Dr. Hurter, Kohn took part, Mr. Dagger stated that the chemical methods manufacture of aluminium were not likely to be able to com- th the electrolytic process, which was now able to produce the 4s. per lb., as against 5s. in 1891. The soldering of aluminium a difficulty which remained to be overcome. A hearty vote s to Mr. Dagger concluded the meeting.

SCOTTISH SECTION.

eting of this section took place on the evening of Tuesday, the ., in one of the rooms of the Philosophical Institution, Queen Edinburgh. Professor Crum-Brown occupied the chair, and as a good gathering, several members from the West of England resent. The chairman congratulated the meeting on its fair ons, and warmly welcomed the contingent from Glasgow and ; after which the minutes of the January meeting were read roved. Dr. G. G. Henderson, the hon. sec., intimated that received from Mr. A. R. Miller (The Cairns, Cambrislang), a itled "The Crystallisation of Carbon—a Suggestion," but had ned serious misgivings as to its suitability for presentation he Society. However, he had decided to let the section decide , and accordingly in the absence of the author he read it, along ostscript which had reached him in time for the meeting. Mr. idea regarding the crystallisation of carbon proved to be some- bout the passing of a current of electricity through liquid monoxide, but it was avowedly entirely unsupported by any- the nature of experiment, and was indeed a "suggestion" of edest possible kind. The meeting was not disposed to take ler's suggestion seriously, and so the incident passed. Dr. A. en, of the Veterinary College, Edinburgh, then described some new articles of laboratory apparatus (displayed within the lecture-room), which he said were little known in this country, but had been very successfully in use in Melbourne. These consisted of a small still filled with four distillation flasks, a steam bath, a hotplate, &c. He claimed nothing great as regards these, further than that they were practical laboratory adaptations evolved step by step as the necessity arose during actual work, that they did effectually what was required of them, and in a very marked degree combined simplicity with economy. Dr. Aitkin's description and the novelties he described were accorded a close attention by the practical chemists present, and numerous interested questions were put, followed by Dr. Aitken's replies, leading to the understanding that any member would be welcomed who called at the laboratory for the purpose of examining the apparatus at work. A cordial vote of thanks was passed unanimously. The concluding item on the list of agenda was a paper by Mr. W. Hogben, on "The Properties and Manufacture of Celluloid." After pointing out that celluloid consisted of pure cellulose, which having gone through the nitrate process was dissolved by suitable solvents and then dried, Mr. Hogben proceeded to illustrate the manufacturing range of the article, by showing a number of specimens finished and unfinished. The paper was well received, and the specimens, most of them of attractive appearance, were examined with interest. A vote of thanks concluded the sitting.

HARMONIOUS COLOURING.

(Continued from page 100.)

The inventor proceeds then by placing the three so-called primary colours, RED, YELLOW, and BLUE, on the common chord C E G in the natural key.

In selecting primary colours according to this system, any suitable reds, yellows, and blues may be used; but they must be as pure as possible and mix without chemical reaction; and, further, should be selected so as to have the three colours of nearly equal intensity.

Red is placed on C, because C has the longest wave length of sound vibration, and red the longest wave length of colour vibration; for similar reasons yellow is placed on E, and blue on G.

The intervening colours, orange, green indigo, and violet, are produced by combination of the primaries, in inverse ratio, according to the number of vibrations possessed by the respective notes they represent.

Thus D occupying the mean or middle position between C (red) and E (yellow), the relative colour to this note, namely orange, is composed of an equal mixture of red and yellow.

F, occupying a position two points above E (yellow) and four points below G (blue), is composed of four parts of yellow and two parts of blue.

A, being four points above G (blue) and eight points below C (red), is composed of eight parts of blue and four parts of red.

B, being nine points above G (blue), and three points below C (red), is composed of three parts of blue and nine parts of red.

The colours formed on this system for the seven natural notes C D E F G A B produce, as illustrated by the accompanying diagram, the seven prismatic or spectral colours in correct order, namely, RED, ORANGE, YELLOW, GREEN, BLUE, INDIGO, and VIOLET.

The sharps and flats for convenience are treated as being midway between the naturals, to which they are respectively sharp and flat, this being the nearest practical approach to perfect harmony in all the keys; so that the colour for each sharp and flat is mixed in equal proportions out of the colours corresponding to the two naturals between which it is placed.

A scale or octave of colour having thus been produced from the so-called primary colours, RED, YELLOW, and BLUE, a keyboard, or diagram, of the same colours in different octaves or depths of tone is next produced.

In music the descending octave of any given note is attained by reducing by one-half the number of vibrations in the note from which the reduction is made, and thus deepening or lowering the tone; and similarly the ascending octave is attained by doubling the number of vibrations in the given note, and thus lightening or raising the tone.

In dealing with black and the primary colours, however, there is this difficulty, that their depth or intensity of tone is an unknown quantity; so that the question of what is a pure octave in colour must be a matter of conjecture; but in carrying out this system it is assumed that if any given colour has its depth or intensity of tone doubled, it stands in all respects analogous to a given note in music, when lowered one octave in pitch or tone; so, also, if any given colour has its tone or density lightened or reduced by adding its own weight of that which gives it light or luminosity, it stands in all respects analogous to a given note in music, when raised in pitch or tone one octave.

In mixing colours in a manner analogous to this doubling of vibrations or lightening of tone, black is taken, and a base colour formed by adding to it its own weight of red, thus 1 part black and 1 part red; to make this mixture an octave lighter 2 parts red are added, the quantity of black remaining constant, and the formula then reads 1 part black to 3 parts red.

Similarly the next octave is 1 black and 7 red, the next 1 black and 15 red, the next 1 black and 31 red, the next 1 black and 63 red; and so on until the octave is reached containing 1 part of black to 1,023 parts of red, when the black is practically exhausted; that is to say, the further combination 1 part black to 2,047 of red cannot be distinguished by the eye from the octave which contains what is called, for convenience, primary red.

From this octave, which contains the so-called primary colours on the common chord C E G, white is introduced, and by making a base colour of 1 part red to 1 part white, octave shades, running from this point downwards towards the octave of primaries, are produced by adding red until the white is practically exhausted; and upward in the other direction by adding white until the red is practically exhausted.

Yellow and blue are treated in the same way; and thus the colours for the common chord in each octave are formed throughout the entire keyboard; then the colours for the remaining notes in each octave are filled in by intermixture as already described for the first octave.

On the keyboard or first diagram of Wilkinson's Colour Chart are sample colours of the primaries and black and white used in producing all the colours in this work. Also the range of grey shades, and the twenty-four keys of harmony, majors and minors, with their common chords, each key being constituted a range, and numbered consecutively. Also a scale of weights for convenience in reducing the proportions given to actual workable weights.

HARMONIES.—All the colours in any one range, being produced from the common chord, harmonize with each other in any order of arrangement. The colours in any one Range may also be mixed in any combination, and the colours produced by such mixtures will harmonize with the remaining colours in the range, and will also harmonize in association with the range of greys and in any order.

The colours also harmonize through successive ranges, thus:—If it be desired to select a few colours out of range 1, and also range 2, note must be taken of the number of the colour last selected in range 1, and the same number in range 2 must come next it, and all the remaining colours in range 2 can then follow in any order.

Again, if it be desired to use colours out of range 1, and also out of range 4, notice must be taken of the number of the colour last selected in range 1, and, for example, assuming it to be 30, then number 30 in each of the ranges 2, 3, and 4 must follow in succession, and all the remaining colours in range 4 are then put in harmony, and any of them can be used if required.

This is due to the fact that all colours of the same number in every range are consecutive harmonies of a scale running through all the octaves, so that each colour bearing the same number represents the correct rise or fall from one key or range to another.

By means of this system, all music can be transposed into colour by drafting the notes and chords from the scales, or constructing them from the keyboard, and colours thus set from music harmonize in consecutive order exactly as they are written or played.

When a certain colour is given as a key to which a series of decorations have to be added, then this key colour must be matched with its corresponding colour in one of the twenty-four ranges, and all the remaining colours in the same range will be in harmony, and may be used or set in association with it.

We have found it extremely difficult to compress anything like an adequate description of this system into a paper of reasonable length, and will only add that if this system of colouring is, as the writer believes it to be, founded upon a correct basis, then it seems destined to revolutionise the colour art.

The system cannot be expected to make colour harmonies clear to the colour blind, any more than the musician could be expected to evolve a musical ear in the man of story who knew only two tunes, one of which was "God save the Queen," and the other wasn't; but to manufacturers, dyers, printers of colour on various materials, painters, decorators, and designers, it seems probable this will prove a work of great practical utility, a work which will substitute a definite system for the "rule of thumb" now prevailing.

Almaden Quicksilver Mines.—The exact production of the Almaden quicksilver mines during 1891 was 48,124 bottles, against 50,035 in 1890. This decrease in production is owing to the state of the administration, and is not due to any decrease in the quantity of ore found. The officials of the company are obliged to limit their expenses to certain fixed sums, and at times they are more inclined to devote these fixed sums to preparing works than to the production of ore. Drills, worked by compressed air, are to be adopted in these mines.

THE COAL-TAR INDUSTRY.

THE coal-tar colour industry, says a contemporary, has during the past year been marked by an increased output and the introduction of many new colours, whilst some of the old favourites have been in decreased demand. There has been, however, no improvement in the price, and as the value of raw materials has been considerably increased, the concerns which confine themselves to colour manufacture alone are not likely to show a profitable year's work. The use of aniline colours for cotton fabrics is extending, many new dyes being found superior in fastness and tint to the natural colouring matters. The McKinley Bill has had practically no influence on this industry. In Germany, F. Bayer & Co.'s well-known Farbenfabrik has taken over the alizarine works at Leverkusen, near Cologne, and the Badische Anilin und Soda Fabrik have furthered the employment of alizarine by pointing out that the addition of ammonium acetate increases the penetration of alizarine colours. The Elberfeld works, as is well-known, do not rely only on their colour business, but have been extending their manufacture of synthetic remedies; amongst these, salophen, a condensation product of para-nitrophenol and salicylic acid, being the newest. Dr. Heymann at these works has synthesised indigo-carmine. The use of azo colours has been extended chiefly by printing the diazo-salt on cloth which has been prepared with an alkaline solution of a phenol. Hydrofluoric acid has been used in place of hydrochloric acid for dyeing or printing with aniline black, and chromium fluoride as a mordant in alizarine wool-dyeing has been mentioned and also described in these columns. Prud'homme has also conducted a series of experiments on the metallic mordants with the view of ascertaining what is the relationship between the colours produced and the position of the metal in the periodic system.

ESTIMATION OF TANNIN IN ACID LIQUORS.

MEERKATZ sought to overcome the difficulty which exists in the determination of tannins in acid liquors, by neutralising the liquor with barium carbonate before making the estimation, and maintained that there was no loss of tannin caused by this treatment.

The difficulty referred to arises from the action of the organic fermentation acids on the hide-powder used for absorbing the tannins, the results obtained being too high.

A. Bartch suspected that the excess of barium carbonate, which must necessarily be added, would precipitate some of the tannin, and instituted experiments with a view to settling this point. To 1 litre of an extract of oak bark 20 grms. of carefully purified barium carbonate were added, and the mixture shaken throughout a day. The solution was then filtered alongside of another litre of the same extract which had been treated in exactly the same way without the addition of barium carbonate. The tannin was then estimated in the two filtrates by Löwenthal's process, with the result that the one to which barium carbonate had been added contained 15·58 per cent. of tannin, while the other contained 22·28 per cent. Another experiment in which 5 grms. of barium carbonate were used gave similar results, as also did determinations made by the Schröeder indirect gravimetric method.

An experiment was also made to see if exact neutralisation with sodium hydroxide could be allowed. A portion of the oak bark extract was mixed with a little acetic acid, then with sufficient sodium hydroxide (previously ascertained) to neutralise this acid; the tannin in this solution, and in another similarly treated with the exception of the addition of acetic acid and sodium hydroxide, was determined by the indirect gravimetric method. The solution which contained the sodium acetate gave 18·93 per cent. of tannin, the other 26·28 per cent.

REACTION FOR TARTARIC ACID.

A ONE per cent. solution of resorcinol in strong sulphuric acid gives a reddish violet coloration with tartaric acid when the mixture is heated gently to about 125° C.; the colour darkens on further warming; at 190° C., carbonization ensues. The reaction serves as a delicate test for tartaric acid, a few drops of the reagent being added to the residue left after evaporating the suspected solution to dryness. One-hundredth mgrm. of the acid can be detected in this way. Neither succinic, malic, citric nor benzoic acid react in this way. Salts of the acid can be similarly tested; in the presence of organic matter the tartaric acid must first be isolated. Nitrous and nitric acid must also be absent, since they both give a blue coloration with resorcinol which masks the other reaction. Attempts to isolate the colouring matter were unsuccessful; it is destroyed on the addition of water.

Pyrogallol and phloroglucinol give analogous reactions, the former producing a violet, the latter a red colouration.

ANTHRACITE COAL AND FOGS.

Lord Mayor received at the Mansion House recently, a
putation on the subject of the domestic use of anthracite coal
on. The deputation, which included several of the owners of
th Wales anthracite collieries, was introduced by Sir J.
ON, M.P., who stated that the object sought by those present
btain for anthracite coal a fair trial in London. It might be
it was an effort to find a new market for the anthracite coal-
but the answer to that was that this particular branch of the
le was in a very flourishing condition. Throughout America
te coal was used, and it was largely in use, as the Lord Mayor
re, in Pembrokeshire, Cardiganshire, Carmarthenshire, and a
lamorganshire. There was, however, a prejudice against it in
on the part of domestic servants, although nothing was easier
iting the ordinary fires with anthracite coal, and great economy
from its use. Anything that contributed to abate what was
the fog nuisance" in London should on public grounds have
al. There were 700,000 houses in London, and about 1,500,000
s; and on a cold day about 40,000 tons of coal were con-
emitting, on well-authenticated calculations, 480 tons of
The saving in consumption to manufacturers by the use of
te coal would be enormous, while it would also tend to remove
nvenience caused by smoke. The coal was being largely used
Berlin, and other Continental cities. There were laws, with
auses, for abating the smoke nuisance in factories and work-
A Bill was introduced into Parliament with the view of
the same law to dwellings, and he thought there was no
hy something of this kind should not become part of our law,
y in London. The members of the deputation were willing to
emselves into an association and to conduct at their own
some experiments in different centres of the metropolis to
w largely the use of anthracite coal would abate what was
he fog nuisance. They hoped that every facility would be
public bodies and private citizens to enable the tests to be
rly.

RED CLEEVES, Mr. CAPPER, and Mr. R. S. RICHARDS after-
ldressed his lordship, also urging the advantage of the use of
e coal for domestic purposes in London. It was stated that
for some of the coal had been received from the Metropolitan
Company, who desired to test it, and that one of the largest
the metropolis was now anxious to fit all the grates in the
so that the coal might be burnt in them. The Grand Junction
Kent Water Companies were using anthracite coal; and
of support had been received from other influential quarters.

LORD MAYOR, in reply, said he did not regard the deputation
g come to the Mansion-house for trade purposes. He took it,
ally with himself and the citizens of London, they had a desire
the terrible nuisance, disorder, and danger resulting from the
He thought they had made out a clear case for—at all events—
r the anthracite coal; and in the public interest he would be
ppy to do anything in his power to further the movement.
eputation then thanked the Lord Mayor and withdrew.

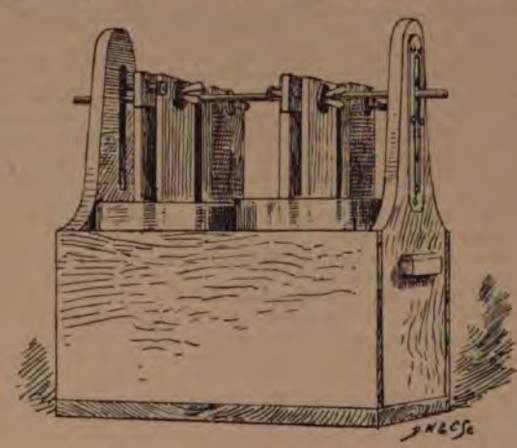
IG AND RIVER POLLUTION IN COLOMBIA.

British Consul at Bogota, in a report recently issued, gives a
ious account of the manner in which the mining industry in
ntry has been paralysed by the enforcement of a law respecting
tion of rivers. This law has existed for some years, but until
s been practically in abeyance. It provides that any mine
llutes the water used for drinking purposes by any town,
manufacturing or agricultural establishment, shall not be
ntil the owners have supplied other water which in quantity
ity shall satisfy the inhabitants of the town, village, or estab-
in question. There is no means of defining what quantity or
f water is to be deemed sufficient. The owner of a mine may
ater of sufficient quantity and of a quality far superior to any
village or a cattle estate has ever before enjoyed, but he has
ty that this will be accepted; and, in the meantime, his mine
uspended until he complies with the unreasonable demands of
rities of some small village or the owner of some small river-
e, who suffer nothing from the pollution of the river by the
ich may be twenty miles away, but who see a good chance of
practically blackmail in order to compromise their legal rights.
ave been peremptorily suspended on the complaint of tiny
nd small estate owners, so that the whole industry of alluvial
es in the country is seriously threatened.

THE "SIMPLEX" CHROMIC ACID BATTERY.

A POWERFUL battery, which can be easily charged and quickly set to work, is a requisite which is often wanted in the laboratory. There are practically three types of batteries available for this purpose, viz.:—the Grove cell, the Bunsen, and chromic acid cell. The cost of the Grove cell is usually an obstacle which stands in the way of its more universal adoption, while both it and the Bunsen cell are often objected to on account of the noxious nitrous fumes emitted by these batteries.

Of late chromic acid batteries have come to the front, in a great measure on account of their convenience, though owing to the smallness of the plates used their efficiency is oftimes much impaired.



In the "Simplex," which we illustrate herewith, there are several points which are novel, and which are noteworthy on account of their enabling the cost of production to be reduced.

It will be seen that ordinary binding screws are dispensed with, the plates, which are drilled at both ends so that they can be reversed until completely dissolved, are fastened by insulated bolts and fly nuts on to a hard wooden bar. By this means the plates can be easily removed in order to wash or amalgamate. Connection from zinc to carbon is made by thin copper strips inserted between the plates and the wooden bar.

These batteries apparently are quite powerful enough for the usual requirements of the laboratory. A battery similar to the one in the illustration gives a current a little over 8 volts, will light a 5 candle-power incandescent lamp for several hours, or drive a motor for working a sewing machine, &c.

If two of these batteries be used, the preparation of calcium from fused calcium chloride can be effected by Matthiesen's process. This battery, therefore, will be seen to be especially suitable for laboratory work. It is said to be cheap to work, and does not require much looking after, or cleaning.

THE RECOVERY OF CYANIDES FROM COAL GAS.

A PATENT has been obtained for the United States by Mr. W. L. Rowland, of Philadelphia, for a process of recovering cyanides from coal gas. It consists, according to the Journal of Gas Lighting, in the addition of an iron salt to the water used in the ordinary way for taking ammonia out of the gas in the usual forms of washing or scrubbing apparatus. The proportion of the salt to be added to the washing water is to be sufficient to remove cyanides, but insufficient to remove sulphides; thus enabling the cyanogen compounds to be removed as soluble ferro-cyanide of ammonia along with the ammonia compounds usually recovered. The invention also comprises the method of recovering the ferro-cyanides from the ammoniacal liquor, which consists in first adding a portion of iron salt to the liquor, boiling off the ammonia in the usual manner, and treating the settlings with lime in order to obtain a solution of ferro-cyanide of calcium. Then in the second stage an alkaline chloride or sulphate is added to this solution, to form the double salt ferro-cyanide of calcium and the alkali, and finally decomposing this with an alkaline carbonate, to produce an alkaline ferro-cyanide, which may be crystallised out in the usual manner.

THE CONDENSED MILK FRAUDS.

THE introduction of the separator into the dairy has had one very peculiar result, and that has been to put upon the market a quantity of brands of so-called "condensed milk," which is really nothing more or less than condensed skim milk. The matter has come to be quite a scandal, and a memorial is being prepared for presentation to the President of the Local Government Board, asking that a measure shall be introduced into Parliament to deal with the subject and prevent the fraud complained of. What this fraud is, is well shown in the following extract from the last report of the Local Government Board:

"As regards condensed milk, it seems to be necessary that the public should hesitate to regard, at any rate the inferior qualities of this article as furnishing much nutriment. Various samples have been found almost completely deprived of fat, having been apparently made of skim milk: and the analyst for Battersea states that the two samples reported as adulterated were certified to have at least 90 per cent. and at least 65 per cent. of the fat abstracted respectively. These substances were sold in tins, which bore labels setting forth their good quality, their especial fitness for infants and household use, and stating that they were free from all additions except cane sugar, a portion only of the cream having been removed. The directions given on the labels for diluting the product with water would, if followed, result in producing exceedingly weak liquids of very little value. To use such preparations as the sole food for infants would undoubtedly be seriously injurious to their health."

The labels on these spurious brands are evidently intended to mislead, and this is shown by the following seven examples, taken from samples which are now on the market:—

1. "The —— condensed milk is warranted free from any addition but the best refined sugar, and to contain the nourishing qualities. A portion of the cream has been extracted, as recommended by the highest medical authorities."

2. "This is partly skimmed Swiss milk, with the addition of sugar. It will be found more economical and convenient than ordinary dairy milk, and is especially adapted for babies."

3. "This milk is prepared with the finest cane sugar only, and is partially skimmed in order to keep it of regular quality all the year round."

4. "It is a well-known fact that the Swiss pasturage on which the cows feed is the richest in the world. We only use the purest sugar, and spare no expense to make our milk the very best of its kind in the market. Condensed milk is better than ordinary cow's milk for all domestic purposes, being uniform in quality and more easily digested, and contains a portion of its cream." (Implying that all condensed milk is skimmed.)

5. "This tin contains cow's milk prepared and preserved with the finest cane sugar, and having a part of the cream taken from it, so strongly recommended by some of the highest medical authorities. It will be found cheaper than ordinary fresh milk, and the best for all household purposes."

6. "This condensed milk is warranted to be pure cow's milk, only part of the cream having been taken off."

7. "This condensed milk is guaranteed to be entirely pure. It is prepared from pure cow's milk, of which a portion of the cream has been removed, and to which nothing but the best sugar has been added. We particularly recommend it for all household purposes, for feeding infants, for use on board ships, in hospitals, etc."

In order that the purchaser shall not be defrauded it is asked that "condensed milk from which any of the cream has been removed must be conspicuously labelled 'condensed skim milk' in large and legible type, and on labels pertaining to this article the word 'milk' must not be used unless preceded by the word 'skim' or 'skimmed' in equally bold type." This is a matter on which there cannot be two opinions, and it is to be hoped that Mr. Ritchie will see his way to help in the manner asked.

THE COMPOSITION OF PATENT MEDICINES.

LAST week at the Dudley Borough Police Court, before the Mayor, G. H. Claughton, Esq., and Mr. J. H. Smith, Joseph Raybould, trading as Fletcher, Raybould and Co., Reform Works, Dudley, was summoned for selling spirits without a licence. Mr. J. B. Davis, supervisor of Inland Revenue prosecuted, and Mr. Barfitt (barrister), instructed by Mr. E. P. Jobson, defended. Mr. Davis, in his opening statement, said that the defendant carried on business in Wellington Road, and manufactured baking powders, egg powder, furniture polish, and household requisites. For some time past, the officers of Inland Revenue had noticed in the local hucksters' shops a dark compound exposed for sale, which was labelled "Indian Brandee," and described as being more brandy, rum, or whiskey, when spirits were required to be t Garland, supervisor, instructed an officer to purchase s compound, which was sent to the Inland Revenue lab analysis, and found to contain a large proportion of alc present proceedings were then instituted under the Spirits 3rd clause of the 24th chapter. The Mayor: Is this a tes isolated instance? Mr Davis: There have been a great chases, but this is the first prosecution, you may take it a or not, as you please. Edward John Butterfield was then stated that he was an officer of Inland Revenue, stationed Mr. Garland instructed him to visit the defendant's works a pint of "Indian brandee." He went to the works and sa houseman, whom he asked for a pint of "Indian brandee," replied they did not sell it by the pint but the pound. Wi how much it was a pound, and was told 2s. 8d. He order and whilst the warehouseman had gone to fetch it Mr entered the office and inquired what he (witness) wanted told that he wanted "Indian brandee" asked witness whe from, and what he required the brandee for. Witness told wanted it for pains in the back, and that he came from Br Witness paid Mr. Raybould 2s. 8d. and handed the compo Garland, supervisor, who was waiting outside the works. to the Mayor, witness said that the reason he did not tell th why he wanted the brandee was that he had not concluded When questioned and examined by Mr. Barfitt, he had think but what the warehouseman really thought his *bona-fide* one. Mr. Garland proved receiving the bottle dividing its contents and sending half under seal to the la Somerset House. The result of the analysis showed that i 41·6% of spirits. Witness went to Mr. Raybould and told had made himself liable for selling spirits without a lic formula given by Mr. Raybould as to the quantities in the b 8 parts of syrup, 2 parts of water, 5 parts of spirits of nitre 2 drops of tincture of capsicum P.B. in each ounce. Mr. that it could not be sold for any other purpose than a beve person would have to have a licence for the sale of spirits. to Mr. Barfitt, the witness Garland said that he had no dou Raybould thought what he was selling was a medicinal mix defendant was liable if he sold it 2° over proof spirit Mr. D out that this was the department regulation in respect t beers, a case upon which had been recently decided at N George Lewin, Fellow of the Institute of Chemistry, and an laboratory Somerset House, said, on the 16th of October he parcel marked Fletcher, Raybould & Co. He analysed it a to contain 41·6% of spirit, proof strength, which was strength of public-house whiskey, the basis was treac sugar and water, capsicum, and a small quantity of oil co to aniseed. It contained no spirit of ether. It did *solutio aetheris nitrosio (aether hyponit)* which was the te the pharmacopeia. The spirit in the compound was ordina and was directly opposed to the formula given by Mr. Ray answer to Mr. Barfitt the witness persisted in stating that t his analysis showed that there was neither spirit of ether pound or sweet nitre, but only alcohol was used. At this proceedings Mr. Barfitt consulted with his client, the result Mr. Barfitt said the evidence given by Mr. Lewin had surprise upon himself and Mr. Raybould. He could not evidence, as they had not been given the remaining half of t of the bottle, in order that it could have been analysed Lewin's evidence tested. Mr. Smith: Did your client ask f half? Mr. Barfitt: No, sir; proceeding, he said he had no wis to say anything as to the manner in which the prosecutio conducted, for it had been most fair. His client had pla entirely in the hands of the magistrates, as he, Mr. Barfitt now resist a conviction. Mr. Lewin stated that he could n formula of Somerset House. Mr. Barfitt said that it wou fair that this should be given for the benefit of wholesale che did not understand complicated Acts of Parliament, and liable who had no intention of infringing the law. He th should know what portion of spirit they were allowed to mixtures. In this case, Mr. Raybould, who had carr business with success for a number of years, thought he *bona-fide*, and he asked the bench, as this was the first pro its kind, to inflict a small penalty. The Mayor said, under stances, they would fine the defendant £10 and 10s. costs thought would meet the case.

A NEW SOURCE OF SOAP.—Considerable quantities of said, are being made from American corn in Germany. that a well-known chemist has succeeded in producing a this cereal which is suitable for the production of soap, sumption being anticipated.

Our Book Shelf.

EMICAL CALCULATIONS. By R. L. Whiteley, F.I C ; 98 pp., ndex. London: Longmans, Green and Co., 1892.

Amongst the numerous works of this class, Chemical Calculations uld rank with the foremost, on account of its comprehensiveness, l logical treatment of the various problems. Some of the best tances of these characteristics will be found in chapters iii., vi., ix., and xiv. Taking these in turn, we find, for instance, in chapter ee, a very important point, viz.: the difference between the absolute sity of specific gravity of gases briefly explained. At the same e the exact meaning of the terms specific gravity and vapour density a gas, as used in this book, is referred to, so that if the student has y doubts on these points he has them removed at the outset.

The principle underlying the combination of gases by volume does t afford much scope for originality of treatment, but we think the y in which the matter is dealt with by the author will give the rage student a far better grasp of this subject than is the case linarily. The chapter on the calculation of the results of quantita- e analysis is a good one, including examples in both Gravimetric l Volumetric analysis. Atomic weights, their actual value, the ermination of the same, and relation of these weights to the riodic Law, are some of the points of which mention is made in pter ten, where again the compactness of this little work is rkedly indicated. The last chapter in the book, on Calorific Power l Intensity, will also be found a useful one to the student.

One of the points wherein this work differs from most of its npeers, is that it is not framed to meet any special examinations, contains the information which it is requisite for the student who ires to fit himself to perform the duties of a well-trained chemist to acquainted with, and will be found a most useful companion to all dents of practical chemistry.

MANUAL OF CHEMICAL TECHNOLOGY. By R. V. Wagner. Edited and translated by William Crookes, F R S., from the 13th German edition as remodelled by Dr. F. Fischer; 596 illustrations, 948 pp., with appendix and index. London: J. and A. Churchill, 1892.

This important work has, since its appearance in 1872, changed so ich owing to the advance of the chemical and allied industries, that it w almost constitutes a new work.

Again the editor and translator has had to make material changes, ing to the varying conditions peculiar to each country, consequently, ny passages have had to be left out, while the editor has added ny pieces of useful information in the form of footnotes, instances of ich may be found on pages 895, 905, and many others.

The illustrations, in which the work is replete, are exceptionally od, and since many have German words or characters forming part the illustration, the editor has added, where necessary, an explanation the terms employed, thereby greatly enhancing the value of woodcuts. The work is divided into sections, the first being voted to the technology of fuel. Fuels of every kind are here followed from charcoal to coal, which leads on to gas as a lighting agent and rce of heat, then oils, finally concluding with the electric light. is section is a most complete one, and will be found a most useful rce of reference upon all matters connected with the gas industry.

Metallurgy comes next in Section II. The manufacture of iron and el is first dealt with, after which the recovery of the most important tals from their ores is described. The extraction of gold and silver ng very interesting and well up to date, as likewise are the articles platinum and aluminium.

The chemical manufacturing industry constitutes of necessity a very ensive section, covering as it does sulphuric acid, potash and soda, orine, ammonia manures, chemical pigments, etc. The conspectus norganic pigments, to be found almost at the end of this section, is t complete, and will be found very interesting to both the chemist the manufacturer. A short article on Thermo-Chemistry ends this ion, which is one of if not the most interesting sections in the work. anic chemical manufactures, including alcohol, colouring matters, manufacture of ceramic wares, cements and mortar, articles of food consumption from the next three sections, the latter including wine cing, beer brewing, and spirit distilling. The last part of this ion on Nutrition, is also very interesting.

ection VII. treats of the Chemical Technology of Fibres, such as bleaching of vegetable fibres, dyeing, and tissue printing, and the nufacture of paper.

The last section contains a miscellaneous collection of arts and in- tries, some of which, however, though placed last are by no means least interesting, including as it does tanning, fats, soap, essential and resins, and the preservation of wood. Tanning by electricity is briefly referred to, and the product obtained by this process is favourably spoken of. Soap making, which has now grown to such an extent that it is always interesting to see the latest information on this subject, is treated rather scantily perhaps, though the information that is given is to the point and of interest. The footnote referring to the manufact of oxgall soap opening the way for further investigation by those who are interested in this industry.

The appendix contains some useful matter referring to the conversion of hydrometric scales and other tables.

The work affords an excellent review of all of the most important industries in which chemical technologists are interested, and should be hailed by such as an authentic book of reference of the highest order.

Correspondence.

*** We do not hold ourselves responsible for the opinions expressed by our correspondents.*

ANSWERS TO CORRESPONDENTS.

J. & H —Your letter has already received our attention.

R. & C —We do not see our way to doing so at present. Later on, perhaps.

C. G. M —Your electro will be returned next week.

D. C. & T. D. - We thank you for your promptitude in the matter, and beg to acknowledge the receipt of your communications.

S. W. G —You will receive both copies this week.

H. C. B —Your letter to hand, for which we thank you. See this week's issue.

UNKNOWN - Try potassium permanganate and sulphuric acid.

GOLD-PLATED VITRIOL RETORTS.

To the Editor of the Chemical Trade Journal.

SIR,—Your readers will be obliged to Professor Lunge for "clearing up the matter." He has informed us in what Mr. Heraen's invention consists, but it would have been as well to have quoted also the passage to which I referred in my previous letter. The exceedingly great value of the system of examination as practised at the German Patentant would then have been more obvious. In "Phillips'" there is not a word about "plating." This is what he says:—"Large platinum stills are also employed for the concentration of sulphuric acid; vessels employed for this purpose are *strongly gilt* on the inside" (the italics are not in the text). Mr. Heraen's method of gilding is very ancient.

Yours faithfully,

WILLIAM E. HEYS.

Manchester, Feb. 6th, 1892.

THE INSTITUTE OF CHEMISTRY.

To the Editor of the Chemical Trade Journal.

SIR,—Your leading article upon "The Institute of Chemistry," though opportune and incisive, is not one tittle too much so. For fourteen years we have had great expectations of the benefits which would accrue to us Fellows from our connection with the Institute. For fourteen years the professional mountain has been in labour, and has brought forth—a mouse; unless, indeed, we regard the resignation of the secretary as the act of parturition.

As a means of "guaranteeing and raising the standard of competency and conduct among those engaged in chemical practice," the Institute is neither "fish, flesh, fowl, nor good red herring." Those responsible officially for the maintenance of its "dignity and welfare"—(*sic*)—have often compared it with the Institution of Civil Engineers, the Institute of British Architects, and the Colleges of Surgeons and Physicians; but I can only *contrast* them. It is sufficiently instructive for me to go to the consulting room of a friend of mine—an engineer—and, after looking at the imposing certificate of membership of the Institute of Civil Engineers hanging there, take from my pocket my "Certificate of Competency!" and a sixpenny telegram form. I soon see which of the three documents are comparable—in fact, I have to take care not to get the two latter confounded, they are so like. Why the Institute of Chemistry should content itself with presenting its Fellows with so paltry a piece of paper is a mystery, as it is not owing to a scarcity of funds.

As you say, sir, institute affairs will never be properly managed until the registrar and secretary is made to give his whole time to the work of the Institute. We want a man in this position—a man of experience, yet not too old to work. A man possessed of good business qualities; a man of the world; a tactician; one who is not only in sympathy with the schools and colleges, but also with the works, the laboratory, and the consulting room. This is the sort of

man we want, and he will be worth a good salary, as, with his whole time devoted to his duties, the labours of the council would be crystallised just at the points where they were wanted, instead of being, as hitherto, comparable only to a solution that is too dilute to pay for boiling down.

Still we must not forget that—even if the Institute have in store such a man—even, let us say, an admirable Crichton, he could easily be lost unless he had a council of the same mettle elected to work with him; this it is now in the power of the Fellows to effect—Fellows of the Institute of Chemistry. Our council has too long resembled—

"The crab so bold, like a knight of old
In scaly armour plated,
And the slimy snail, with a shell on his tail,
And the star fish, radiated."

Let us then be up and doing, let us elect a new council with a living, breathing spirit, and having elected the council as a going concern, let that body appoint an officer or officers in harmony with a policy which shall in future be more satisfactory than we have had to be content with in the past.

I am, sir, yours &c.,

William Jesse Lovett.

THE PRICE OF ANTHRACENE.

To the Editor of the Chemical Trade Journal.

Sir,—Not the least interesting and certainly not the least valuable feature in *The Chemical Trade Journal*, is the weekly review of the various markets. These reports have been a great assistance to me in the various branches of my trade.

In your remarks in the issue No. 245, respecting the tar products markets, you state *re* Anthracene, "There is not the slightest prospect of business so long as buyers are determined to hold back." With this pronouncement all your subscribers who have carefully examined the situation will agree. But if an answer was asked to the question, "How long will buyers hold back?" various replies would be returned. Yet, to tar-distillers, it is at the present time so important a question, that I feel assured you will allow me space in your columns to state the conclusion that careful enquiry has forced upon me. It may be advisable to give the facts upon which I lean.

From first-hand sources I learn that there are no existing large stocks of anthracene. This fact grows in importance when we remember that the anthracene produced in the season 1890 and 1891, showed a considerable increase over that of 1889 and 1890, owing to the icy spring of 1891. The consumption of alizarine has been steadily increasing. The value of last years imports to this country exceeded that of 1890 by £23,000., notwithstanding a reduced price, and the fact that alizarine is now imported direct into countries which before received it *via* Great Britain. The system of lighting by electricity is making itself felt on gas production. Notwithstanding the very gloomy and cool autumn, and the dense fogs of last December, the production of gas in the last six months of 1891 was considerably less than in the corresponding half of 1890. The reduction in the make of the Gas Light and Coke Company was 184,467,000 cubic feet.

If warm and clear weather continue, this reduction in the make of gas, and therefore of tar, will be greatly accentuated during the first half of 1892. The wintry weather in the early period of last year, continuing to the end of April, made the gas consumption at that period phenomenally large. Tar distillers in consequence produced more anthracene than their contracts covered. This surplus being offered led the alizarine makers last summer and autumn, to conclude that there would be a continued over-production this year, and that if they kept off the market they would make contracts at a very greatly reduced figure. Although the quantity of tar to be distilled will be much influenced by the meteorological character of the next three months, in any case, the makers of alizarine will require all the anthracene that will be produced this season. Why then should tar distillers *again* play into the hands of the alizarine makers by an exhibition of anxiety to make contracts? I use the word again to call attention to the results of former scares. In February of 1887, A anthracene was sold at 7½d. per unit, yet in July the alizarine producers paid 1s. 4d. per unit. In November of the same year, tar distillers sold at 1s. 1d., and in April of the following spring, large quantities were bought at 1s. 5d., and a considerable tonnage at 1s. 6d. In July, 1889, sellers were found at 1s. per unit, yet in January, 1890, buyers gave 1s. 6d. In April of the same year, A was sold at 1s. 3d, although in October 1s. 5d. was paid. If alizarine makers are able by a waiting policy to secure a considerable portion of the English make at 12½d. per unit, is it likely they will offer an advanced price before their stocks run so low that they fear serious consequences? If tar distillers would refrain from offering for two or three months, a very different face would be given this market.

My conclusions are, that the price of anthracene, in the immediate future, will be determined by the action of the tar distillers. The price in 1893 and afterwards, will depend on the influence of the new illuminant on gas, *i.e.*, tar production. And from a careful examination it appears that, by that date, there will be no anxiety on the part of the tar distiller to dispose of his production; the anxiety will be on the part of the alizarine maker to secure sufficient anthracene for his requirements.

I am, yours &c.,

Chemicus.

Trade Notes.

To Our Subscribers.—We desire to tender our best thanks to those correspondents who have so kindly returned us No. 246 as requested. Those who possess this number had better take care of it, as the issue is now out of print.—Ed. *C. T. J.*

The Deliveries of Salt.—The deliveries of the Salt Union's salt in December, 1891, were approximately 96,000 tons, and 104,000 tons in December, 1890.

Messrs. Brunner, Mond and Co.—The balance sheet of Brunner, Mond and Co., Limited, the great alkali manufacturers, was issued on Thursday. The profits for the half-year are £242,000., out of which a dividend on ordinary capital of 50 per cent. is recommended. £50,000. is carried to reserve, and £36,000. carried forward.

Anthracene Yellow C.—Messrs. Leopold Cassella & Co. have recently introduced a new dye, which is intended to supplant fustic, more particularly for the purpose of dyeing wool. It is fast to light, soap, and stoving, and does not bleed on to the white. The following print colour is stated to give good results:—40 grs. anthracene yellow C. powder, 410 grs. water, 25 oxalate of ammonium, 115 grs. water and 330 grs. British gum. Silk may be dyed in a similar manner, and cotton can be dyed very fast to light and washing if mordanted with potassium bichromate.

Prize Competition on Sulphate of Alumina.—The Swiss Society of Chemical Industry has extended the time for the receipt of the competition essays on sulphate of alumina until 31st December, 1892. It will be recollected that this offer was made with a view of obtaining information as to the extent and effect of foreign substances, especially iron salts, on the sulphate of alumina of commerce. The results of this investigation cannot fail to be of considerable value to those engaged in the dyeing and calico printing industries. The essays are to be sent to the President of the Society, Professor Dr. Gnehm, Basel.

Manchester Association of Engineering Students.—A meeting of the above society was held last Saturday evening, at the Central Board Schools, Deansgate. The chair was taken by the President, Mr. Thomas Jones, M.I M.E. A paper was read by Mr. F. G. Dixon, on "Calico Bleaching, Dyeing, and Printing." The paper treated chiefly of bleaching with the "Mather" kier, in order to show the economy effected by the employment of this kier. The latter portion of the lecture was devoted to a description of the various printing processes and machines, the latter being illustrated with diagrams. The author also showed numerous pieces of print, representing the various stages of the printing process.

New Benzine and Varnish Works.—The firm known as the Emery-Webster Oil Co., Philadelphia, changed its name on January 1st to the Lewis Emery Oil Co. The management has been taken by Mr. W. H. Magoffin, and the business represents the extensive refinery of the Hon. Lewis Emery, junr., of Bradford, who has for years been prominent in the producing and refining business. The company makes a special line of illuminating and lubricating oils, benzine and gasolines, and turns out very high class goods. This new connection will in no way interfere with Mr. Magoffin's present business of manufacturing kalon oil, and to that he has added a line of wood fillers, surfacers and cheap varnishes, and will be prepared to push this trade more actively than ever.

The Helidon Spa Water Spring.—At Helidon, 72 miles from Brisbane, on the intercolonial railway line, there is situated the Helidon Spa water spring. The waters have the following constituents:—

	Grs. per gallon.
Bicarbonate of Sodium	221·36
,, Potassium	2·34
,, Lithium	1·81
,, Calcium	10·65
,, Magnesium	1·82
,, Rubidium—traces in the spectroscope	
Chloride of sodium	48·08
Silica	2·13
Alumina and iron	3·23
	291·42

MILL AT GIJON.—A company has been formed at Gijon object of establishing a large paper mill on the most approved similar to the one at present being erected near Bilbao.

BAKU PIPE LINE.—Mannesmann high pressure tubes have , by Dr. W. Von Siemens, for pumping petroleum a distance miles and to a height of 3,300 ft. The pipe line which runs from the Caspian Sea, westward, is 4 in. in diameter, and the re connected by the conical screw thread joint of the American by an American machine. These Mannesmann steel tubes are tly on the surface, except at road crossings. The pumping is nearly 90 atmospheres, 1,350 lb. to the square inch, and aid to be no leakage.

ATER SOFTENING PLANT.—Messrs. Woodhouse and Raw- ed, Kidsgrove, Staffordshire, have obtained an order from the on of St. Helens for the ironwork required in connection water softening scheme at that place. The buildings and l be erected on land adjoining the Brownedge Reservoir, and r from Collins Green, Knowsley, and Kirkby will there be ith lime water, for the purpose of removing the bicarbonate nd iron, which at the present make it hard. The cost will be 0,000., and it is expected the system will be in operation e end of the year.

DENCES IN CHESHIRE: GOVERNMENT INQUIRY.—The overnment Board have issued a notice to the Cheshire County to the Local Boards of Northwich, Middlewich, Sandbach, sford, and to the brine pumpers throughout the salt district of that Colonel Ducat, R.E., will hold an inquiry at Northwich esday, February 10th, when evidence will be taken in regard rious schemes propounded locally for the formation of com- boards and areas under the New Brine Pumping Compensation dence Act. The inquiry is held in response to a memorial ous Cheshire landowners affected by the subsidence.

CHEMICAL CLUB.—The annual meeting of the Manchester Club was held recently in the Club rooms, Victoria Hotel; mas Jackson, president of the Club, in the chair. The report nce-sheet were of an encouraging nature.—The President, in vote of thanks to the Hon. Treasurer, expressed the hope e interested in the chemical industries would recognise the es offered by the Club, and by their adhesion render it more useful.—After the election of the committee and the con- f the ordinary business a smoking concert was held in the m of the Club, under the presidency of Mr. Ivan Levinstein, d by Mr. Alderman Bailey, Mr. J. Carter Bell, Mr. Peter d others.

ADULTERATION IN 1891.—A record of the adulteration of food during the last year has just been published, and in the list s examined by the public analysts appear milk, bread, flour, offee, cocoa, sugar, mustard, jam, tea, lard, wine, beer, spirits, s. Jam and tea were found to be wholly innocent of sophisti- Bread, flour, wine, and beer were nearly, but not quite im- . Out of 11,976 samples of milk 1,530 were found to be ed; there were 266 cases of adulterated coffee to 1,753 analysed; there were 18 instances of adulterated pepper in mples, and no less than one-third of 96 samples of cocoa were condemned; and altogether out of 27,465 samples of eous commodities examined 3,069 were not wholly genuine.

BLEACHING FLUID.—A bleaching fluid, under the name of has been recently patented by L. Schreiner, and is described German paper. It is made as follows:—125 parts of resin are in 200 parts of oil of turpentine. To this is added a solution 12 to 25 parts of hydrate of potash in 40 parts of water, 90 peroxide of hydrogen then added to the mixture. The jelly ined exposed to the sun changes in two or three days to a d, and this is Ozonine. The same change takes place in the t in this case it requires several weeks to effect. The emulsion amme of Ozonine in a litre of water acts as an energetic bleach- t on fibre, wood, straw, cork, or paper, and also on solutions and soaps. The bleaching effect is just as energetic in acid as ne solutions.

ROLYTIC GAS EXPERIMENTS.—An interesting experiment lately made by M. Chabry, of the Société de Biologie, with the pressure which can be produced by electrolytic generation a closed space. While the highest pressure before realised in was 6,570lbs. to the square inch (447 atmospheres, Gassiot), ry has succeeded in getting as high as 12,000 or 18,000lbs. to re inch; and the experiment was broken off merely because meter cracked (without explosion). The electrolysed liquid 5 per cent. soda solution. Both electrodes were of iron; one hollow sphere in which the gas was collected, the other an ncentric tube. The current employed was 1½ amperes, and constant during the experiment, which was merely one pre- to a research in which very high pressures were desired.

FIRE AT A TAR DISTILLERY.—Last Wednesday week a most disastrous fire broke out at Upper North-street, Poplar, on the premises of Messrs. Grindley and Co., Limited, tar and rosin distillers. The premises covered an area of over 60 square yards, and were surrounded by a large number of small private houses. The flames burst out in a long building, which was used as a manufactory, and the mischief spread with such rapidity that in ten minutes offices, stores, factory, and other buildings were blazing with tremendous fury, and the flames were spreading right and left in the fiercest manner. The ground was covered with thousands of barrels of rosin and tar, as well as great tanks of spirit and oil, and when the firemen commenced to arrive from the nearest stations all this inflammable material was already burning with overpowering strength. Neighbouring property was damaged to an enormous extent.

THE HAMMERSMITH BRIDGE SUGAR REFINERY.—The sale of the plant and machinery belonging to these old established works, which has been notified in our advertisement columns recently, takes place at the above works on Wednesday and Thursday next, at eleven o'clock prompt, when Messrs. Wheatley, Kirk, Price, and Goulty will sell the modern manufacturing plant which was formerly used in the sugar refining operations at these works. In the catalogue there are several items which chemical manufacturers may care to know are for sale, comprising three Lancashire boilers, one being a "Galloway," two slide and screw cutting lathes, shaping machine and several other workshop fittings. In the laboratory the chief lots are a set of polariscopes by Hoffman, and two chemical balances, one by Becker, and the other by Oertling, also, a slide-reading polariscope as well as a large quantity of laboratory fittings, Bunsen burners, glass stoppered bottles, and chemicals. There are also several pumps, including one by Pearn, filter-press by Dehne, five mechanical stokers, seven centrifugal machines, three vacuum pans. A small gas plant, including a bench of nine retorts, three scrubbers, and one single lift gasholder. A small sulphate of ammonia plant, four charcoal grinding mills, charcoal retorts, and a large assortment of tanks, small pumps, engines, air pumping engines, piping, cocks, valves, railway waggons, locomotive cranes, and other machinery used in connection with the chemical industries.

SALFORD GAS.

The illuminating power is expressed in standard candles; the ammonia and total sulphur in grains per 100 cubic feet. The carbonic acid is calculated to volumes per cent. The determinations have all been made on the gas supply to the Manchester Technical Laboratory, 32, Blackfriars-street.

Date. 1892.	Illuminating power.	Ammonia.	Total sulphur.	Carbonic acid.
Jan. 21	.... 15·7 ..	Nil. ..	18·06 ..	1·00
,, 22	.... 15·2 ..	0·05 ..	17·13 ..	0·92
,, 23	.... 12·5 ..	0·04 ..	24·24 ..	1·04
,, 25	.... 15·1 ..	— ..	— ..	0·92
,, 26	.... 16·0 ..	Nil. ..	22 32 ..	1·07
,, 27	.... 16·5 ..	0·02 ..	14·94 ..	1·04
,, 28	.... 15·8 ..	Nil. ..	13·61 ..	0·99
,, 29	.... 16·2 ..	0·05 ..	17·76 ..	1·24
,, 30	.... 15·3 ..	0·07 ..	23·51 ..	1·04
Feb. 1	.... 14·9 ..	0·04 ..	16·06 ..	1·25
,, 2	.... 15·3 ..	0·06 ..	17·78 ..	1·27
,, 3	.... 14·4 ..	0·01 ..	21·51 ..	0·95
,, 4	.... 15·2 ..	0·02 ..	20·52 ..	1·24
,, 5	.... 14·5 ..	Nil. ..	18·67 ..	0·99
,, 6	.... 14·5 ..	Nil. ..	15·31 ..	0·99
,, 8	.... 15·8 ..	0·03 ..	16·43 ..	1.28
,, 9	.... 15·9 ..	0·02 ..	20·64 ..	1.32
,, 10	.... 15·4 ..	0·04 ..	18·04 ..	0.72

Market Reports.

TAR AND AMMONIA PRODUCTS.

A small business seems to be doing in benzol. Sales of 90's are reported up to 2s. 5d., and in 90's up to 1s. 10d. There is, however, evidently very little confidence in the future of the article. Solvent naptha, creosote, and crude carbolic are still at unremunerative prices, while pitch retains an astonishing firmness. Anthracene is unsaleable at anything like prices quoted, they are 1s. for 30% A, and 8½d. to 9d. for 30% B.

The sulphate of ammonia market is practically lifeless, and as the dealers are buying freely it is clearly they who have again intercepted the orders. This leaves the market practically in their hands, and they will use their position to force values down. Again one hears the prophecy that £10. will be touched. The immediate future will

depend upon the requirements of these speculators, as there is not too much offering, but until they are obliged to buy the sluggish state of the market will continue. Business is reported at Hull and Leith at £10. 10. 0d., and some reports quote as low as £10. 8s. 9d. and £10. 7s. 6d., but these transactions consist principally of second hand parcels. At Liverpool good grey can be bought at £10. 8s. 9d. Beckton price is £10. 10s. 0d., with second hand offering at £10. 7s. 6d., while business is being done in London outside makes at £10s. 10s. 0d. Nitrate is very steady at 9s. 6d. to 9s. 7½d.

MISCELLANEOUS CHEMICAL MARKET.

There is a fairly steady market for all products of the alkali trade, and quotations generally are without change. Caustic soda remains still at the old rates, viz.: f.o.b. Tyne, in 10 ton lots, 77% £11. 5s.; and f.o.b. Liverpool, 74% £11. 5s.; 70% £10. 5s.; 60% £9. 5s. Cream, 60% £8. 17s. 6d. Soda ash, 1⅜d. per degree for 48% to 58% Leblanc ash. Ammonia carbonate ash 58%, 1 5/16d. to 1⅜d. per degree. Bleaching powder in fair demand, and price firm at £7. 10s. f.o.r. makers' works. Chlorate of potash and soda respectively at 5¾d and 7d Recovered sulphur still scarce, and price firm at £6. 10s. f.o.r. There is still a good demand for vitriol and muriatic acids, and values are without change. Salt cake in bulk 37s. 6d. per ton makers' works. Sulphate of copper still quiet from £14. 10s. to £14. 15s. on the spot. White powdered arsenic firm at £11. per ton with fair enquiry. Acetates of lime, brown and grey, remain dull, and prices without any improvement either for prompt or forward delivery. Acetate of lead rather easier. Other acetates and acetic acid have rather a tendency to lower prices. Sulphocyanides quiet. Prussiate of potash still meets with good enquiry. General chemicals for calico printers and dyers, and the textile trades continue rather dull owing to limited demand.

REPORT ON MANURE MATERIAL.

The market continues to drag, and on the week prices of both phosphatic and nitrogenous material favour buyers.

High grade, 75/80%, mineral phosphate rock has been sold at 9d. per unit, and there are further sellers at the price. This may be considered as about the value of hot-air-dried Charleston and Peace River Rocks, though more money is asked for these. Prices offered for Canadian phosphates for summer shipment are so far below the ideas of raisers that we do not hear of any business at all having been concluded. There is nothing fresh to report in continental phosphates, though a moderate business is passing in the lower grades at easy prices.

It is understood that as low as £4. has been accepted for an arrived cargo of River Plate Bones, but £4. 2s. 6d. to £4 5s. per ton, according to position, may be considered as about nearest value, the market being very slow. Crushed Kurrachee Bones, near at hand, offer at £4. 10s. 0d. per ton, and it is likely that a shade less might be business. Bombay Bone Meal offers freely in all positions at £4. 10s. per ton, but this price is now scarcely obtainable in quantity.

Nitrate of soda is quiet, at 9s. 6d. per cwt. on spot. Due and arrived cargoes have been sold at 9s. 4½d. to 9s. 6d. per cwt., according to size and test. November-December shipments may be had at 9s. 6¼d. per cwt., but this is now rather above buyers' idea of value.

There is nothing fresh to report in dried blood, kainit, or superphosphates, the market for all these being steady but rather quiet.

THE METAL MARKETS.

LONDON, WEDNESDAY.—Pig iron dull; Scotch warrants closed at 43s. cash. Middlesbrough 35s. 8d. cash, and Hematite 45s. 7d. cash. Copper, quiet but steady. Chili bars, G.O.B.'s and G.M.B.'s closed at £43. 10s. cash, and £44. to £44. 7s. 6d. three months. Tin easier; Straits closed at £88. 15s. to £89. 5s. cash, and £88. 15s. to £89. 5s. three months. Australian, £88. 17s. 6d. cash; English ingots, £92. 10s. to £93. Lead quiet: Spanish, £10. 12s. 6d.; English, £10. 15s. to £11. Silesian spelter, ordinary, £21. 7s. 6d. Quicksilver steady: Second hands, £6. 18s. 6d. Copper shares easier: Cape 1½ to 1⅝; Copiapo 2⅛ to 2¼; Libiola 2¾ to 2⅞; Mason and Barry 4 1/16 to 4⅛; Rio Tinto 16½ to 16 5/16; Tharsis 5⅜ to 5½; Namaqua 1⅜ to 1⅝; Panulcillo ½ to ¾.

WOLVERHAMPTON, WEDNESDAY.—A slightly firmer tone was imparted to to-day's market by the proximity of the Manchester Miners' Conference and the possibility of scarce and dear fuel. Quotations, however, were not perceptibly altered. Marked bars were quoted £8.; merchant sorts, £6. 10s.; common, £6.; galvanised sheets (doubles), £12. 5s.; plain sheets quiet at £7. 5s. for singles; hoops, £6. 15s.; gas tube strip, £6. 7s. 6d. A fair trade and prices tolerably well maintained; all mine hot blast common, 40s.

GLASGOW, WEDNESDAY.—Market easy, with fair bu Scotch done; closing with buyers at 43s. cash, sellers as Middlesbrough done at 35s. 9d. and 35s. 8d. cash also at one month; closing with buyers at 35s. 8d. cash, and 35 month, sellers ask 35s. 8½d. cash. Hematite done at cash, also at 45s. 9d. and 45s. 9½d. one month; closing wi 45s. 7d. cash and 45s. 9d. one month, sellers ask 45s. 7½ 45s. 10d. one month.

THE LIVERPOOL OIL AND COLOUR M

LIVERPOOL, WE

OILS.—In palm oil there has been no improvement, th being attended by declining prices. Sales have been few at £20 15s. per ton; Benin, £20. 5s; Old Calabar, £20. Olive has been steady with a moderate business passing demand is still limited, prices being subject to considerable ranging from £36. 10s. to £41. per tun according to quality is steadier with a fair amount of business doing. Holders at 19s. 6d. to 20s. 6d. per cwt. in export casks. Cotton s virtually unchanged. There was a slight tendency to impro the week, Liverpool refined being quoted at 18s. 9d. To- however, remains at 18s. 6d. per cwt., and 19s. 6d. for Castor oil is steady, good seconds Calcutta is quoted at 2 3/16 shade easier than last week, whilst first pressure French, ov reduction of the stocks, remains firm at 2 13/16d. per lb. Tallo dull, prices still being in favour of buyers. There is no deviation from previous prices, viz.: 24s. to 26s. Norths; 2 Souths. Resin has been much more active during the there has been good business done with Common still at 4s. cwt.; 4s. 9d. to 6s. 6d. for Medium: 7s. to 10s. Fine. turpentine have improved during the week, and sellers are 25s. 6d. per cwt. Both American petroleum and Russian r experienced no alteration.

COLOURS unaltered. Ochres: Oxfordshire, comm medium, £12., best, £15.; Derbyshire, common, 40s. 50s., best, 60s. Welsh, best, 70s., seconds, 50s., and 18s.; Irish, Devonshire, 40s. to 45s.; French, J.C., 55 M.C., 65s. to 67s. 6d. Umber: Turkish quiet. Devonsh 55s. White lead, red lead, and oxide of zinc unchanged. red, £6. 10s. to £10. Cobalt: Prepared oxide, 10s. 9s. 9d.; blue, 6s. 6d. Zaffres: No. 1, 3s. 6d.; No. Oxide of iron: common, £6.; medium, £10.; finest, £20.

THE LIVERPOOL MINERAL MARKE

The firmness reported in our market last week has been Manganese: Arrivals this week are nil, stocks have been duced, and prices continue firm. Borate, 6¼d. per lb. £21. 10s.; oxalate, 1s. 6d. per lb.; chloride, £15.; £12. 10s., steady. Magnesite: Raw lump quiet. Ra £6. 10s., and calcined, £12. 10s. Bauxite (Irish Hill brand in brisk demand at full prices; lump, 20s.; seconds, 16s.; 12s. French chalk: Arrivals this week still small, a goo however, has been done at full figures, especially for G.G. White" brand; silvery, 90s. to 92s. 6d.; prime quality, 9 superfine, 105s. Barytes:—Carbonate: Prime lump conti on account of the weather preventing production, being qu to 95s.; nuts, 70s. to 80s.; whilst finest white sulphate is stead White," No. 1, 70s.; No. 2, 60s. to 65s.; No. 3, 45s. steady. Iron ore steady; Bilbao prices still advancing on the strike; Irish and Cumberland unchanged; Sant manganiferous, more doing. Emerystone: Best brands at good prices. No. 1 lump, £5. 10s. to £6.; smalls £5. Fullers' earth quiet; best lump, 55s.; fine impalpable gr "Emerald" ground, 80s. Scheelite, wolfram, tungstate o tungsten metal in fair demand, prices firm. Chrome ore o centages inquired for, both for spot and forward delivery at Antimony ore and metal have been firmer. Asbestos Potters' lead ore of best quality quiet; smalls, £12. 10s. to selected lump, £14. 10s. to £15. 10s. Calamine little doing sulphate (celestine) continues very quiet. Limespar especially for English manufactured, old G.G.B. brand at 50s. (ground). Felspar unchanged. Fluorspar: Best qu Ferro manganese firmer, 75%, £12.; 85%, £13. 15s.

brisk. Spanish, £5.; best Ceylon lump at last quotations; Italian and Bohemian, £4. to £12. per ton. "Founders," £5. to £6.; Blackwell's "Mineraline," £10. French sand, 20s. to 22s. 6d. Ground mica, £45. to £50. China clay steady; common, 18s. 6d; good medium, 22s. 6d. to 25s.; best, 30s. to 35s. (at Runcorn). Bog ore (oxide of iron) steady; finest quality, 22s. to 23s.

TYNE CHEMICAL REPORT.

TUESDAY.

In the chemical trade, the chief feature is the reduction in the price of soda crystals, this article being now quoted at £2. 17s. 6d. per ton gross weight f.o.b. Tyne nett, at which a large business has been done. Bleach continues in good demand at full price. Caustic soda steady with an increasing demand. Recovered sulphur still continues very scarce, price nominally £6. 5s. nett. Bleaching powder, softs, £7. 10s. per ton, hards, £7. 15s. per ton; caustic soda, 77% £11. 10s. per ton, 70% £10. 5s. per ton; recovered sulphur, in 2 cwt. bags, £6. 10s. per ton; soda ash, 48% £5. 8s. 9d. per ton, 52% £5. 17s. 9d. per ton, 56% £6. 6s. 9d. per ton; alkali, 36% £4. 18s. 6d. per ton; white alkali, 48% £6. 10s. per ton, 50% £6. 15s. 6d. per ton, 52% £7. per ton; hyposulphite of soda, £7. per ton in 5-7 cwt. casks, £7. 15s. per ton in 1 cwt. kegs in 10 ton lots; silicate of soda, 75° Tw. £2. 13s. 6d. per ton, 100° Tw. £3. 13s. per ton, 140° Tw. £4. 2s. 6d. per ton; soda crystals, in casks, £2. 17s. 6d. per ton gross weight, in 2 cwt. bags £2. 17s. 6d. per ton nett weight, chlorate of potash, 5½d. per lb. less 6%; pearl hardening, £3. 10s. per ton nett; pure white sulphate of alumina, £4. 10s. per ton; blanc fixe, £7. 10s. per ton; chloride of barium, £7. 10s. per ton; nitrate of baryta crystals, £17. per ton; nitrate of baryta crystals, ground, £17. 10s. per ton; sulphide of barium, £7. per ton; carbonate of alumina, £28. 10s. per ton; aluminate of soda, £33. 10s. per ton; hydrate of barium, £11. per ton.

Salt, price unchanged, demand rather better.

Coals: Trade is depressed and prices drooping. Best Northumbrian steam, 10s. per ton f.o.b.; gas coal 8s. 6d. to 9s. per ton; manufacturing and bunker coal, dull. Coke steady, from 16s. to 16s. 6d. per ton f.o.b.

Stocks of coal increasing owing to strikes at engineering works on Tyne and Wear.

Durham Miners' Wages: The result of the ballot on the masters proposal for a ten per cent. reduction of wages, is stated as being a large majority against the proposed reduction. This has been communicated to the Newcastle Coal Owners' Association and they will hold a meeting at an early date to consider the matter.

WEST OF SCOTLAND CHEMICALS.

GLASGOW, TUESDAY.

Products in the mineral oil (paraffin) section all stand unchanged in values, but the call for burning oil perceptibly slackens, as usual with the opening out of the year. The West Lothian Oil Co., one of the sorely labouring concerns, last week proposed a system of preference stock for the purpose of raising money so as to get under weigh again; but the times are not propitious at present with the Scotch mineral oil industry, and the chances of the operation being carried through are generally held here as being very dubious.

Last weeks shipments of sulphate of ammonia out of Leith, amounted to 507 tons. The tone of the market has not improved and indeed, if anything, there has rather been some slight falling off. At the close of last week it was certainly offered at £10. 7s. 6d., and now it can be bought at £10. 8s. 9d., although some hold for more. The feeling is weak, and there is nothing doing in forward.

Bichromate of potash and bichromate of soda are unchanged in price, but the demand has been more satisfactory and the two makers are believed to hold very little, if any reserve stock.

In general chemicals the chief feature is the Union concession in soda crystals (now put down at £2. 17s. 6d.), the motive for which is not at present quite clear. The price of bleaching powder is also fractionally cheaper; but in soda ash and refined alkali there has been stiffening, to the extent of reduced discounts.

Chief prices current are:—Soda crystals, £2. 17s. 6d., nett Tyne; alum in lump, £5. 10s., nett Glasgow; soda ash, 1⅜d., nett, Tyne; caustic soda, white, 74°, £11. 5s., 70/72°, £10. 5s., 60/62°, £9. 2s. 6d., and cream 60/62°, £8. 17s. 6d., all nett Liverpool bicarbonate of soda, 5 cwt. casks, £6. 15s., and 1 cwt. casks, £7. nett Tyne; refined alkali, 1⅜d., less 2½% Tyne; bleaching powder, £7. 6s. 3d. nett Tyne; saltcake, 37s. 6d.; borax, English refined, £29. 10s., and boracic acid, £37. 10s., nett Glasgow; bichromate of potash, 3¼d., less 10% for Scotch and English deliveries (for export 3⅜d., less 10% f.o.b. Glasgow); bichromate of soda, 2¾d., less 10% for Scotch and English deliveries (for export 2½d., less 10% f.o.b. Glasgow); chlorate of potash, 5¾d., less 5% any port; nitrate of soda, 9s. 6d.; sulphate of ammonia, £10. 8s. 9d. to £10. 10s., f.o.b. Leith; salammoniac, first and second white, £35. and £33., less 2½% any port; sulphate of copper, £15. less 5% Liverpool; paraffin scale (hard), 2⅛d., and soft 2⅛d. to 3d. per lb.; paraffin wax, 120°, semi-refined, 3⅝d. to 4d.; paraffin spirit (naphtha), 7d. a gallon; paraffin oil (burning) 5d., 5¼d. and 5½d. according to kind, at works, for Scotch buyers (English sales about 1d. lower); ditto (lubricating), 865°, £4. to £4. 5s., 885°, £5. 5s. to £7., and 890/895°, £6. to £8. Week's imports of raw sugar at Greenock were nil.

New Companies.

CANNINGTON, SHAW AND CO., LIMITED.—This company was registered on the 30th ult., with a capital of £250,000., in £100. shares, to acquire, take over as from January 1st, 1892, and carry on the business of glass manufacturers, now carried on under the style of "Cannington, Shaw and Co.," at the Sherdley Glass Works and the Peasley Glass Works, both situate at Sutton, near St. Helens, Lancashire. The subscribers are:—

	Shares.
J. Cannington, 20, Exchange Chambers, Liverpool	1
E. Cannington, 20, Exchange Chambers, Liverpool	1
A. K. Cannington, 20, Exchange Chambers, Liverpool	1
J. Shaw, Sherdley Glass Works, St. Helens	1
W. L. Shaw, Sherdley Glass Works, St. Helens	1
J. S. Cannington, Sherdley Glass Works, St. Helens	1
T. Killey, Sherdley Glass Works, St. Helens	1

ELIJAH CLAPHAM, LIMITED.—This company was registered on the 30th ult., with a capital of £6,000., in £5. shares, to carry on the business of combers, spinners, manufacturers, dyers, printers, finishers and merchants. The subscribers are:—

	Shares.
C. Hall, Station-street, Huddersfield, solicitor	1
Mrs. Clapham, Laurel Bank, Wilsden, Bradford	1
Mrs. Clapham, 3, Queen-street, Wilsden	1
F. Wood, Wilsden, manager	1
T. Butterfield, Prospect-place, Wilsden	1
Mrs. Iredale, Clifton House, Outlane, near Huddersfield	1
T. Wrigley, Ballroyd, Longwood, near Huddersfield, clerk	1

MARBLED SLATE CO. LIMITED.—This company was registered on the 28th ult. with a capital of £10,000., in £5. shares, to acquire and carry on the business of enamelled slate and marble manufacturers and merchants, now carried on at Bristol-road, Gloucester, under the style of "The Marble Slate Company." The subscribers are:—

	Shares.
G. L. Preece, Bristol-road, Gloucester	1
Mrs. A. B. Greig, Churchdown, Gloucester	1
A. B. Greig, Churchdown, Gloucester, manufacturer	1
Mrs. J. R. Campbell, 10, Hanover-crescent, Brighton	1
J. R. Campbell, 39, Lombard-street, E.C., manufacturer	1
H. P. B. Vaughan, White Hall, Madley, near Hereford	1
Mrs. H. P. B. Vaughan, White Hall, Madely, near Hereford	1

SUNBEAM FARMING CO., LIMITED.—This company was registered on the 29th ult., with a capital of £10,000., in £10. shares, to erect, establish, and conduct a college or home for instruction in practical agriculture, with training farms, etc., in Canada and elsewhere. The subscribers are:—

	Shares.
H. Tanner, 27, Stanwick-street, W., science examiner	1
J. E. Hayes, 49, Thornhill-square, Barnsbury, N., surveyor	1
A. Morten, 21, Hogarth-road, S.W.	1
J. E. Cracknell, 13, Victoria-street, S.W., emigration agent	1
M. Matson, St. Osyth, near Colchester	1
A. G. Weddell, Burchet House, Dorking	1
R. Capel, 38, Lowndes-street, S. W.	1

The Patent List.

This list is compiled from Official sources in the Manchester Technical Laboratory, under the immediate supervision of George E. Davis and Alfred R. Davis, who report professionally upon the value of Chemical Patents.

APPLICATIONS FOR LETTERS PATENT.

Electrical Batteries. C. G. Moor. 1,426. January 25.

Rendering Oils Less Dangerous in Storage and Transport. I. S. McDougall and J. T. McDougall. 1,437. January 25.

Rendering Arsenical Compounds Less Dangerous in Storage and Transport. I. S. McDougall and J. T. McDougall. 1,438. January 25.

Rendering Corrosive or Poisonous Liquids Less Dangerous in Storage or Transport. I. S. McDougall and J. T. McDougall. 1,439. January 25.

Refrigerators. J. Freyberg. 1,440. January 25.

Electro Plating. T. Parker and J. Wakefield. 1,442. January 25.

Coating Iron and Steel with Lead. R. B. Thomas. 1,443. January 25.

Improved Water Meter. R. Haddan. 1,465. January 25.

Magnesium Flash Light Lamp. A. Hesekiel. 1,466. January 25.

Recovering Precious Metals from their Ores. C. Moldenhauer. 1,467. January 25.

Recovering Metals from their Solutions. A. Thomas. 1,471. January 25.

Manufacture of Dyes from Derivatives of Diamidodiphenyl-Methane. J. Y. Johnson. 1,473. January 25.

Vacuum Pumps. J. Y. Johnson. 1,478. January 26.
Secondary Batteries. J. B. Entz and W. A. Phillips. 1,484. January 26.
Utilising the Heat of Spent Liquors from Dyeing, etc. J. Dawson. 1,506. January 26.
Improvements in the Manufacture of Potassium Carbonates from Potassium Sulphate. P. Romer. 1,548. January 26.
Sewage Treatment. A. Levieux. 1,567. January 26.
Fractional Separators. S. K. Welch and J. H. Godman. 1,591. January 27.
Manufacture of Pipes and Improved Joints for the Same. J. Spencer. 1,607. January 27.
Improved Treatment of Sewage. W. M. Greaves. 1,609. January 27.
Manufacture of Sodium and Potassium Bichromates. O. Imray. 1,642. January 27.
Refrigerating Apparatus. J. G. Lorrain. 1,651. January 27.
Manufacture of Alkaline Sulphides and Carbonates with the Recovery of Sulphide of Hydrogen and other Bye-Products. C. F. Claus. 1,652. January 27.
Extracting Sliver C. Hoepfner. 1,654. January 27.
Manufacture of Colouring Matters Derived from Anthraquinone. B. Willcox. 1,657. January 27.
Manufacture of Alkaline Sulphates, Sulphides, and Carbonates, with the Recovery of Hydrate of Alumina, Sulphide of Hydrogen, or Sulphur and Hydrochloric Acid or Chlorine. C. F. Claus. 1,659. January 27.
Improved Evaporator and Dryer. W. M. Greabes. 1,689. January 28.
Improvements in Preparation of Chlorine. G. E. Davis and A. R. Davis. 1,692. January 28.
Improved Ore Sampling Device. R. C. Hawley. 1,713. January 28.
Microphones. G. Binswanger. 1,752. January 29.
A Non-Conducting Paint or Composition for Steam-Heated Surfaces. B. Bolton. 1,777. January 29.
Tanning by Electricity. R. Pinna. 1,786. January 29.
Manufacture of Artificial Musk. J. Y. Johnson. 1,794. January 29.
Apparatus for Purifying Water. C. Flori. 1,819. January 29.
Utilizing Galvaniser's Waste Pickle. J. J. Tate and A. S. Famag January 30.
Manufacture of Hydraulic Cement and Concrete. A. J. Campio January 30.
Refrigerating Apparatus for Breweries. J. G. Hall. 1,863. Janua
Improvement in the Manufacture of Ammonium Nitrate. H. 1,868. January 30.

Gazette Notices.

PARTNERSHIPS DISSOLVED.

W. Van Oppen and G. C. Slimon, under the style of Van Oppen Chalgrove-road, Hackney, dealers in soap and perfumery; as far a W. Van Oppen.

T. Harris and E. Harris, under the style of the Union Acid Co., Ru Newton Heath, chemical agents and drysalters; as far as regards E.

J. F. Tidswell, W. J. Borman, and F. E. Tidswell, under the style and Borman, Shoe-lane, City, and Holloway-road, N., emery manufac far as regards W. J. Borman.

Order made on Application for Discharge.

Nesbit, Alfred Anthony, Camberwell New-road, S.E., analytical Discharge granted conditionally.

IMPORTS OF CHEMICAL PRODUCTS
AT
THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending January 27th.

Acetic Acid—
Holland, 121 pks. A. & M. Zimmermann

Acetone—
Holland, 2 pks. A. & M. Zimmermann

Alkali—
France, 350 c. Arnati & Harrison
,, 300 P. Hecker & Co.

Ammonia (Liquid)—
Germany, £1 W. G. Blagden

Barytes—
Belgium, 221 pks. Leach & Co.
,, 20 cks. W. Harrison & Co.
Germany, 19 P. Jantzen
,, 48 W. Harrison & Co.
,, 47 O'Hara & Hoar
Belgium, 20 Sawer, Mead & Co.

Barium Chloride—
Holland, 11 pks. Petri Bros.

Brimstone—
Italy, 142 t. A Hughes
,, 5 Hyslop & Symonds
,, 9 J. Kitchen, Ld.
,, 10 F. Smith
,, 64 G. Boor & Co.
,, 50 Page, Son & Co.
,, 1 C. J. Capes & Co.
,, 200 B. Jacobs & Son
,, 10 J. Puddy & Co.
,, 200 W. C. Bacon & Co.
,, 50 Johnson & Hooper
,, 106 Blackwood, Bryson & Co.
,, 200 Brandram Bros. & Co.

Caoutchouc—
Singapore, 110 c. R. & J. Henderson
Inhambane, 4 S. Figgis & Co.
Nossi Be, 7 Clarke & Smith
Mozambique, 19 Prop. Bull Wf.
Inhambane, 26 L. & I. D. Jt. Co.
France, 80 Stiebel Bros.
Zanzibar, 40 L. & I. D. Jt. Co.

Caustic Potash—
France, 100 c. F. W. Berk & Co., Ld.
,, 100 Gerard & Co.

Caustic Soda—
Holland, 180 c. Beresford & Co.

Chemicals *(otherwise unascribed)*
Holland, £10 G. Perry
Austria, 6 pks. M. D. Co.
Germany, 1 Phillipps & Graves
,, £74 12 T. H. Lee
,, £85 53 A. & M. Zimmermann
Holland, £12 T. H. Lee
,, 16 Phillipps & Graves
Geelong, 8 Clyde S. Co.

Copperas—
Germany, 25 pks. B. & N. Wf. Co., Ld.

Cream of Tartar—
Italy, 20 pks. Howard & Son
,, 44 W. C. Bacon & Co.
France, 20 B. & F. Wf. Co., Ld.

Dyestuffs—
Annatto
Ceylon, 11 pks. E. Produce & Estates Co.
Argols
Italy, 410 pks. B. Jacob & Sons
,, 203 Thames S. S. & L. Co.
Cutch
Germany, 20 pks. Hoare, Wilson & Co.
Extracts
France, 5 pks. Mory & Co.
,, 50 B. & F. Wf. Co., Ld.
,, 250 L. J. Levinstein & Sons
Belgium, 40 H. Johnson & Co.
U. S., 55 W. Burton & Sons
,, 101 Skilbeck Bros.
Indigo
E. Indies, 473 cbts. Union Lighterage Co.
,, 169 G. Ward & Son
,, 52 Ralli Bros.
,, 35 F. Stahlschmidt & Co.
,, 16 L. Achard & Co.
,, 33 Kleinwort, Sons & Co.
,, 19 F. Huth & Co.
,, 50 Hicks, Nash & Co.
,, 81 Williams, Torrey & Co.
,, 330 P. & O. Co.
,, 84 Arbuthnot, Latham & Co.
,, 13 Ernsthausen & Co.
,, 64 pks. Ross & Deering
,, 258 chts. 1 bx. Elkan & Co.
,, 541 L. & I. D. Jt. Co.
Myrabolams
E. Indies, 500 pks. G. Ward & Sons
,, 648 L. & I. D. Jt. Co.
Saffron
Spain, 1 pk. Price, Hickman & Co.
Sumac
Italy, 50 pks. Dunlop Bros. & Co.
,, 900 J. Kitchin, Ld.
,, 400 Union L. Co., Ld.
,, 200 G. S. N. Co.
,, 500 bgs. W. Shelcott
Tanners' Bark
Melbourne, 6 t. T. H. Lee
Adelaide, 47 Devitt & Hett
Natal 21 Hicks, Nash & Co.
,, 4 A. & W. Nesbitt
Belgium, 30 J. Kitchin, Ld.
Turmeric
China, 62 pks. H. A. Litchfield & Co.

Farina—
Italy, 1 pk. Rouchelli & Co.

Glucose—

U. S.,	3,500 pks.	3,500 c.	J. Forsey
,,	300	300	Baxter & Hoare
,,	200	1,200	Union L'th'ge Co.
,,	340	340	W. Shepherd
,,	250	250	Trier, Mayer & Co.
,,	355	2,005	Bot. & Nichs. Whvs.
,,	500	500	J. F. Ohlmann & Co.
,,	1,000	1,000	Union L'th'ge Co., Ld.
,,	400	2,210	F. J. Warren
,,	500	500	Barratt, Tagam & Co.
France,	10	90	F. Fink & Co.
U. S.,	750	750	Devitt & Hett
,,	25	150	W. Isted
,,	2,000	2,000	Union L'th'ge Co., Ld.
Holland,	60	60	C. A. Farmer
France,	1,100	1,100	J. Barber & Co.
,,	500	500	L. Norman & Co.
,,	4	43	Prop. Hay's Wf.
U. S.,	1,250	1,250	L. Norman & Co.
,,	1,475	2,565	R. G. Hall & Co.
,,	905	2,932	L. Sutro & Co.

Manure—
Germany, 8 c. Boehm & Co.
E. Indies, 50 t. Dyster, Nalder & Co.

Naphtha—
Belgium, 4 pks. W. G. Blagden
Germany, 10 drs. C. Webster.
Belgium, 5 Stein Bros.

Ochre—
Rangoon, 19 cks. L. & I. D. Jt. Co.
France, 59 Arnati and Harrison
,, 41 J. L. Lyon & Co.

Painters' Colours—
Germany, 4 css. 5 pks. Phillipps & Graves
France, 33 Flageollet & Co.
,, 13 pks. G. J. Thompson
Germany, 200 cks. Craven & Co.
Belgium, 20 bgs. O'Hara & Hoar
Germany, 3 pks. T. H. Lee
,, 15 L. & I. D. Jt. Co.
,, 11 T. H. Lee
Belgium, 1 Leach & Co.

Paraffin Wax—

Rangoon,	424 brls.	H. H
U. S.,	69 brls.	A.
,,	58	T.
,,	300	Morda
,,	755	J. H. Usi
,,	125	A. Bro
,,	100	Blumann
,,	170	Prod. Bo

Pearl Ashes—
Holland, 200 c. F. W. Berk &

Phosphate Rock—
U. S., 2,100 t. C. A. & H
Germany, 50 F. W. Berk &

Plumbago—
Ceylon, 66 brls.
,, 221 J. Thredder,
,, 177 N
Germany, 20 cs. B. Dubows
Ceylon, 267 brls. Hoare,
,, 92 cks. Prop. S

Potassium Bichromate—
U. S., 30 pks. S. Lamb

Potassium Bromide—
U. S., 21 pks. Baron, H

Potassium Cyanide—
Germany, 10 pks. Fletc

Potassium Hydrate—
France, 4 pks. Spies Br

Potassium Muriate—
Germany, £100 F. W. Berk &

Saltpetre—
E. Indies, 528 bgs. C. Wim
Germany, 400 cks. P. Hoc
E. Indies, 706 bgs. Lucas &

Sodium Acetate—
France, 9 pks. S. F. Wa
Belgium, 8 Magee, Tay
,, 36 W. G.
,, 36 Sawer, M

Sugar of Lead—
Germany, 20 pks. G. B

Tartaric Acid—
Holland, 16 pks. W. C. Ba
,, 1 Dome

Ultramarine—
Belgium, 2 cks. W. Harri
,, 2 pks. Le
Holland, 19 Haeffner, Hilp

ead
4 cks. Elkan & Co.
13 Leach & Co.

ide—
52 brls. M. Ashby, Ld.
500 cks. Soundy & Sons
190 brls. M. Ashby, Ld.
50 J. Matton

VERPOOL.

ending February 4th.

of Lime—
k, 479 bgs.
—
n, 12 cks.

cisco, 1,500 sks.
ouc—
18 pks. Cunard S.S. Co.
ls *(otherwise undescribed)*
n, 11 cks.
Precipitate—
al, 16,596 bgs. Mason & Barry, Ld.
Pyrites—
1,650 t. Tennants & Co.
2,060 Matheson & Co.
f Tartar—
2 hds. 2 cks.
2
21
s—
tivi
86 bgs.
cts
phia, 75 brls
100 bxs.
ood
80 ps.
bolams
840 bgs. Forbes, Forbes & Co
3,455 D. Sassoon & Co
671
e
100 sks. A. Ruffer & Sons
150 bgs. 200 brls. J. Kitchen, Ld.
300
112 brls.
lia
917 bgs.
176 t. 633 bgs.
745 S. Virarite & Sons
232 Barry Bros.
50 Essayan Shahun & Co.
36¾ P. T. Apostolo
220 bgs. Barff & Co.
925 M. Valeiro & Co.
1,200
—
m, 20 bgs.
ths—
37 t. Williamson, Milligan & Co.

Isinglass—
Para, 25 cs. A. Booth & Co.
Naphtha—
New York, 2,000 brls.
Ochre—
Marseilles, 42 brls Wilson, Sons & Co.
Orchella—
San Francisco, 64 brls.
Phosphate—
Ghent, 2,000 bgs.
Terneuzen, 450 t.
Pyrites Sulphate—
Huelva, 2,573 t. Matheson & Co.
Saltpetre—
Calcutta, 2 cs.
Hamburg, 69 cks.
Sodium Silicate—
Rotterdam, 1 ck.
Stearine—
New York, 50 hds. Co-op. W. Scty.
" 20
Sulphur Ore—
Huelva, 1,084 t. Matheson & Co.
Tartaric Acid—
Rotterdam, 6 cks.
Ultramarine—
Rotterdam, 22 cks.
Hamburg, 8
White Lead—
Rotterdam, 38 cks.
Trieste, 15 cs.

GLASGOW.

Week ending February 4th.

Barytes—
Rotterdam, 46 cks.
Barytes Sulphate—
Antwerp, 200 bgs.
Chemicals *(otherwise undescribed)*
Rotterdam, 2 cks. J. Rankine & Son
Copper Pyrites—
Huelva, 3,612 t.
Dyestuffs—
Alizarine
Rotterdam, 14 cks. J. Rankine & Sons
" 37
Logwood
Belize, 87 t. Allison, Cousland & Co.
" 375 McArthur, Scott & Co.
Farina—
Antwerp, 10 bgs.
Glucose—
New York, 342 brls.
Painters' Colours—
Antwerp, 4 cs. 2 cks.
Paraffin Wax—
New York, 790 brls.
Tartar—
Oporto, 4 cks. J. & P. Hutchinson

Ultramarine—
Antwerp, 10 css.
White Lead—
Antwerp, 11 cks.
Rotterdam, 18 J. Rankine & Son

HULL.

Week ending January 28th.

Acetate of Lime—
New York, 164 bgs. Wilson, Sons & Co.
Caoutchouc—
Flushing, 5 css. Zeeland S.S. Co.
Chemicals *(otherwise undescribed)*
Rotterdam, 1 ck. W. & C. L. Ringrose
Bremen, 1 kg. 3 css. Veltmann & Co.
Danzig, 4 cks. Wilson, Sons & Co.
" 29 "
Pari, 45 "
Copenhagen, 5 "
New York, 1 "
Antwerp, 27 pks. "
" 1 ck. "
Dyestuffs—
Alizarine
Rotterdam, 100 pks. 7 brls. W. & C. L. Ringrose
Myrabolams
Bombay, 800 bgs.
Sumac
Trieste, 50 bgs. Wilson, Sons & Co., Ld.
Palermo, 600 Wilson, Sons & Co., Ld.
" 450
Farina—
Hamburg, 50 bgs. Lawson & Sons
Glucose—
Rotterdam, 40 kgs. Hutchinson & Son
Guano—
Christiansund, 260 bgs. Wilson, Sons & Co.
Stearine—
Antwerp, 12 bgs. Bailey & Leetham
Danzig, 19 cks. Wilson, Sons & Co.
Rotterdam, 50 bgs. "
Sugar of Lead—
Rotterdam, 13 cks. W. & C. L. Ringrose
Ultramarine—
Rotterdam, 1 ck.
Varnish—
New York, 11 brls.
Vaseline—
New York, 6 brls. Wilson, Sons & Co.
White Lead—
Antwerp, 77 cks. Bailey & Leetham
Rotterdam, 12 Johnson Bros.
Zinc White—
Rotterdam, 10 cks. W. & C. L. Ringrose

TYNE.

Week ending January 30th.

Barytes—
Antwerp, 175 bgs.
Rotterdam, 22 cks. Tyne S.S. Co.
Salt—
Hamburg, 750 t. Clephens & Wiencke
Ultramarine—
Rotterdam, 10 css. Tyne S.S. Co.

GOOLE.

Week ending January 20th.

Antimony—
Boulogne, 4 cks.
Caoutchouc—
Boulogne, 3 cks.
Copper Pyrites—
Huelva, 785 t.
Dyestuffs *(otherwise undescribed)*
Boulogne, 33 cks. 8 css.
Alizarine
Rotterdam, 49 cks.
Logwood
Belize, 490 t.
Farina—
Rotterdam, 110 bgs.
Delfsjyhl, 702
Hamburg, 2,554
Nitrate—
Rotterdam, 100 bgs.
Ochre—
Treport, 71 cks.
Potash—
Treport, 4 cks.
Calais, 20 dms.
Dunkirk, 10
Potassium Muriate—
Rotterdam, 20 cks.
Saltpetre—
Rotterdam, 300 bgs.
Hamburg, 8 cks. 20 kgs.
Waste Salt—
Hamburg, 593 cks.
Zinc Oxide—
Antwerp, 10 brls.

GRIMSBY.

Week ending January 23rd.

Chemicals *(otherwise undescribed)*
Hamburg, 9 pks.
Dyestuffs *(otherwise undescribed)*
Rotterdam, 10 pks.
Farina—
Hamburg, 200 bgs.
Zinc Ashes—
29 cks.

EXPORTS OF CHEMICAL PRODUCTS

OF

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

nding February 3rd.

6 cks. £26
n, 7 pks. 30 cs. 41
1 16
100 bls. 150
f, 200 360
—
m, 10 c. £4
ns Cake—
10 t. 18 c £50
10 35

Ammonia (Liquid)—
Bombay, 3 c. £10
Ammonium Carbonate—
Canterbury, 1 c. £3
Paris, 2 t. 9 69
Treport, 4 7 122
Calcutta, 4 12
Ammonium Chloride—
Cologne, 2 t. 7 c. £48
Ammonium Sulphate—
Rotterdam, 101 t. 8 c. £1,050
Ghent, 30 9 350

Arsenic—
Lyttleton, 2 t. 1 c. £28
Barytes Chlorate—
New York, 10 c. £39
Barytes Nitrate—
New York, 2 t. 10 c. £49
Barytes Sulphate—
Leghorn, 30 cks. £84
Caustic Potash—
Lyttleton, 1 t. 1 c. £43

Caustic Soda—
Sydney, 11 c. £30
Auckland, 5 t. 6 £53
Carbolic Acid—
Lyttleton, 4 t. 6 c. £54
Hiogo, 18 73
Chemicals *(otherwise undescribed)*
Huelva, 2 c. £15
Algoa Bay, 10 css. 35
Naples, 9 86
Auckland, 4 kgs. 28
Chloride of Lime
Boston, 24 t. 7 c £200

Citric Acid—

Reval,	10 c.		£77
Rotterdam,	2 cks.		70
Rangoon,	1 cs.		8
Hamburg,	11	1	154
Copenhagen,		5	30

Coal Products—

Aniline

Shanghai,	10 cs.		£90

Aniline Oil

Dunkirk,	49 drs.		£513

Coal Tar Dyes

Boston,	4 cks.		£155

Naphtha

Melbourne,		10 drs.	£10
Rotterdam,		20 puns.	220

Naphthaline

Antwerp,	795 bgs.		£117
Baltimore,		42 cks.	60
New York,	81		119

Paraffin Wax

Gibraltar,		2 cs.	£8
Auckland,	4 pks.		157
Wellington,	83		361

Pitch

Terneuzen,	448 t.		£784
Antwerp,	593		1,030
St. Nazaire,	1,149		1,995
Dunkirk,	649		1,167

Tar

Natal,	78 drs.		£11
Calicut,		50 rnlls.	30
Elmina,		5	5
Treport,	9 cks.		33

Copper Sulphate—

Canterbury,	2 t.		£33
Lisbon,	20	3 c.	288
Bordeaux,	46	8	646
Marseilles,	24	13	339

Corrosive Sublimate—

Madras,		1 cs.	£28

Disinfectants—

Shanghai,		6 c.	£10
Gibraltar,	10 pks.		23

Fertilizers—

Cullera,	707 t.	6 c.	£7,073

Guano—

Barbadoes,	60 t.		£600

Manure—

Hamburg,		280 t.	£3,080
Martinique,		60	240
Bordeaux,		40	170
Jersey,		113	1,120
Barbadoes,		16	140

Mirbane—

Hamburg,		7 css.	£29

Oxalic Acid—

Dunkirk,	23 t.	15 c.	£715

Phosphorus—

Adelaide,		2 cs.	£15
Dunedin,		10	63

Potassium Chlorate—

Madrid,		4 c.	£77

Potassium Iodide—

Melbourne,		1 c.	£61

Salammoniac—

Odessa,	4 t.	19 c.	£167
Sydney,	1	19	75

Salicylic Acid—

Auckland,		2 cs.	£9

Saltpetre—

Adelaide,	1 t.	5 c.	£26
Melbourne,	2	10	54
Oporto,	2	5	46
Newcastle,		10	11

Sheep Dip—

Pt. Elizabeth,	500 drs.			£117
E. London,	15 c.	427	50 cs.	180
San Francisco,			300	900

Soda Crystals—

Suez,		7 c.	£2

Sodium Bicarbonate—

Canterbury,	1 t.		£8

Strontium Nitrate—

New York,	5 t.	2 c.	£143

Sulphur—

Wellington,		4 cks.	£7
Algoa Bay,		50 kgs.	92

Sulphuric Acid—

Cape Town,		15 c.	£7
E. London,	7 t.	5	29

Superphosphate—

Cherbourg,	390 t.	2 c.	£1,170

Tartaric Acid—

Canterbury,		5 c.	£30
Adelaide,	1 t.		122
Kurrachee,		10	64
Wellington,	1	10	142

LIVERPOOL.

Week ending February 3rd.

Acetate of Iron—

Vera Cruz,	2 t.	2 c.	£11

Alum—

Havana,	3 t.	18 c.		£20
Alexandretta,	1	5		7
Galatz,	5	2		30
Smyrna,	11		1 q.	66
Halifax,	5	4	1	30
S. John's, N.F.,	2	15		16
Valparaiso,	2	14	3	16
Hobson's Bay,	2	14	1	16
Melbourne,	2	1		12

Alum Cake—

Calcutta,	9 t.		3 q.	£40

Ammonium Chloride—

Philadelphia,	9 t.	14 c.		£240
New York,	6	11		160
Genoa,	3	9	3 q.	61

Ammonium Sulphate—

Alicante,	20 t.	12 c.		£215
Bordeaux,	20	5		223
New York,	27	2	1 q.	300
Souerabaya,	130	5	2	1,450
Genoa,	20	12	3	223
Barbadoes,	316	2	3	3,497
Valencia,	288	17		3,703
Gd. Canary,	30	19		331

Bleaching Powder—

Bombay,	15 cks.		
Boston,	988		
Chicago,		32 bxs.	
Genoa,	65		
New York,	346		
Odessa,	15		
Oporto,		50 brls.	
Philadelphia,	70		
Rouen,	15		
Corunna,	5		
San Sebastian,	81		

Borax—

Rotterdam,	6 t.	13 c.	2 q.	£200
Antwerp,	6	2		187
Vera Cruz,		18	3	26
Havana,		10		16

Brimstone—

Boston,	50 t.	2 c.		£260
Copenhagen,	15			79
St. Nazaire,	80	2		469

Calcium Chloride—

Adelaide,	3 t.			£6
Fiume,	3			7
Sydney,	10	1 c.		23

Carbolic Acid—

Baltimore,	8 t.	7 c.		£314
Rotterdam,	10	15		502
Leghorn,		1	2 q.	3
Odessa,		6	3	16
Rio de Janeiro,	4	7		118
New York,	3	14		147

Caustic Potash—

New York,	1 t.	1 c.	£21

Caustic Soda—

Alicante,	30 dms.		
Almeria,	8		
Barcelona,	710	205 brls.	
Bilbao,	100		
Bombay,		20 kgs.	
Boston,	450	25 brls	
Cardenas,	30		
Carthagena,	45	20	
Chicago,	10	10	35 bxs.
Cienfuegos,	20		
Genoa,	88		
Hamburg,	5		
Leghorn,	45		
Malaga,	19		
Maranham,	5		
Marseilles,	18	6	
Oporto,	29		
Pernambuco,	110		
Philadelphia,	25		
Piræus,	50		
Rotterdam,		3	
Rouen,	106		
St. John's, N.B.,	150		
Salonica,	47		
Samarang,	22		
San Francisco,	25		
Santander,	88		
Savanilla,		70 kgs.	
Sydney,	9		
Talcahuano,	25		
Trieste,	8		
Beyrout,	35		
Catania,	10		
Melbourne,		35 pks.	
Monte Video,	100		
Naples,	30		
New York,	603	140	10 bxs.
Rangoon,	5		
Rio de Janeiro,	15		
San Sebastian,	30		
Seville,	193	30	
Tunis,	15		
Valparaiso,	58		

Chemicals (*otherwise undescribed*)

Volo,		4 c.		£6
Mersyne,		3	2 q.	5
Ferrol,		5	1	9
Amsterdam,		8	2	27
Malta,	1 t.	18		62
Trieste,	1			27
New Fairwater,	2	9	1	80

Cobalt Oxide—

Valencia,		1 bx.	£17

Copperas—

Calcutta,	25 t.	10 c.		£60
Valparaiso,	7	4	1 q	15
Melbourne,	4	18	1	10

Copper Sulphate—

Venice,	20 t.	1 c.		£303
Algiers,	9	14	1 q.	142
Rotterdam,	3	10	2	56
Rouen,	121	5		1,820
Leghorn,	2	2		29
Monte Video,	3	15	3	57
Nantes,	22	15	1	360
Smyrna,	2	4		31
Genoa,	15	9		218
Marseilles,	158	15	1	2,500
Porto Alegre,		10		8
Mollendo,		12		9
Talcahuano,	1	6	3	17
Valparaiso,	40	3	1	619

Disinfectants—

Bombay,	2 t.	19 c.	£14
Calcutta,		10	15

Epsom Salts—

Colon,	10 css.		
Havana,	10 brls.		
Rio de Janeiro,	50 kgs.		

Guano—

Valencia,	19 t.	10 c.	£160

Gypsum—

New York,	35 t.	12 c.	£122

Magnesium Carbonate—

Tampico,		8 c.	3 q.	£17

Magnesium Chloride—

Chicago,	6 t.	13 c.	£18

Manure—

Havana,		10 c.	£10
Havre,	100 t.	6	355
Rochefort,	738	5	2,402
Penang,	50		400

Phosphorus—

Barbadoes,		1 cs.	£7
Shanghai,		16	102
Vera Cruz,		19	104
Yokohama,		10	94
New Orleans,		17 c.	123

Potassium Bichromate—

Seville,	1 t.	17 c.	£60
Madras,	1	5	44

Potassium Carbonate—

Vigo,	1 t.	3 c.	£24
New York,	5	2	81

Potassium Chlorate—

Philadelphia,	2 t.	10 c.	£116
Rotterdam,	2	12	123
Kobe,	7	10	353
Sydney,	7	10	354
Lisbon,	1	10	71
New York,	15	17	831
Gothenburg,	15		699
Boston,	5		233
Melbourne,	5	10	261

Potassium Prussiate—

Bombay,		2 c.	1 q.	

Salammoniac—

Valparaiso,		4 c.	1 q.	
Alexandretta,		10		

Salt—

Abonnema,	10 t.		
Accra,	5		
Antwerp,	100		
Axim,	5		
Bakana,	10		
Boston,	200		
Bremerhaven,	98		
Buguma,	10		
C. C. Castle,	25		
Chicago,	295		
Hamburg,	15		
Lavannah,	13		
Manoh,	20		
Old Calabar,	288¼		
Akassa,	400		
Algoa Bay,	9		
Barbadoes,	100		
Calcutta,	3,603		
Cameroons,	95		
E. London,	36		
Isles de Los,	75		
London, Ont.,	100		
Opobo,	140		
Portland, Or.,	200		
Pt. Natal,	141		
Rotterdam,	105		
Saltpond,	7½		
Savannah,	300		
Sette Cama,	9		
Sydney,	225		
Trinidad,	32		2 c.

Saltcake—

Baltimore,	315 t.	10 c.	

Sheep Dip—

E. London,	3 t.	9 c.	
Pt. Natal,	2	15	2 q
Algoa Bay,		14	
B. Ayres,	17	17	
Sydney,	50 drs.		

Soap—

Accra,	60 bxs.		
Addah,	35		
Alexandria,			10 k
Algoa Bay,	1,660		50 c
Baltimore,	19		
Bayin,	109		
Belize,	30		
Bombay,	620		93
Calcutta,	250		54
Cameroons,	440		
Canada,			2
C. C. Castle,	80		
Cape Lopez,	50		
Cape Town,	1,200		
Colon,	100		
Degama,	200		
E. London,	575		50
Ferrol,	20		
Gaboon,	50		
Genoa,	30		
Iquique,	122		
Kingston, Jam.,	390		
Loanda,	100		
Malta,			40
Monrovia,	32		
Montreal,	25		3
Mumford,	100		
Natal,	100		
New Orleans,	500		
Old Calabar,	1,120		
Piræus,	80		42
Pt. Elizabeth,	100		
Pt. Natal,	1,736		10
St. Lucia,	120		
Shanghai,	3,806		
Sherbro,			13
Sierra Leone,	80		
Singapore,			46
Trinidad,	1,660		
Akassa,			40
Antwerp,	1,012		
Attaiboe,	123		
Barbadoes,	1,150		3
Cairo,	5		
Constantinople,			10
Curacao,	50		
Jeremie,			1
Patras,	4 pks.		1
Valparaiso,			2

Soda Alkali—

Genoa,	34 brls.		
Leghorn,	68		
Madrid,	25		
Tunis,	40		
Zante,	20		

Soda Ash—
Antwerp, 5 cks.
Baltimore, 150 451 tcs.
Barcelona, 10
B. Ayres, 320 brls.
Calcutta, 4
Callao, 5 55
Cienfuegos, 6
Genoa, 10
Monte Video, 100
New York, 221 1,055
Oporto, 12
Smyrna, 70
Sydney, 10 378 cks.
Yokohama, 100
Boston, 15 brls 388 1,200 bgs.
Hamilton, 600
Maranham, 20
New Glasgow, 30 kgs.
Philadelphia, 165 cks. 918 tcs 120
Sherbrooke, 96

Soda Crystals—
Alexandria, 20 brls.
Batavia, 25 cks.
Bombay, 250 kgs.
Constantinople, 14
Fiume, 10
Genoa, 6
Malta, 100
St. John's, N.B. 215
San Sebastian, 67
Valparaiso, 25
Boston, 140 280
Halifax, 34
Havana, 8
New York, 330
Samarang, 67
Sherbrooke, 96 bgs.

Sodium Biborate—
Antwerp, 1 t. 3 c. 1 q. £35
Vera Cruz, 11 cks. 92
B. Ayres, 5 150

Sodium Bicarbonate—
Alexandria, 6 kgs.
Amsterdam, 25
Antwerp, 10
Bremerhaven, 20
B. Ayres, 100 cs.
Fiume, 20
Genoa, 50
Havre, 115
Malaga, 30
Marseilles, 80
Nagasaki, 500
Naples, 50
Newcastle, 120
Sydney, 530
Vera Cruz, 70
Yokohama, 100 900 bgs.
Alexandretta, 6
Bilbao, 50
Bombay, 250
Melbourne, 604

Sodium Bichromate—
Seville, 1 t. 16 c. £60
Rotterdam, 4 2 q. 6

Sodium Chlorate—
Genoa, 1 t. 10 c. £92
Hamburg, 1 60
New York, 5 270
Rotterdam, 10 30

Sodium Nitrate—
Carthagena, 11 t. 3 c. 3 q. £106
Calcutta, 19 2 9
Sydney, 5 47
Malaga, 12 6 3 117

Sodium Silicate—
Barcelona, 5 cks.
Ghent, 4 brls.
Leghorn, 6
Lisbon, 35
Malta, 15
Smyrna, 53
Tunis, 4

Sodium Sulphate—
New York, 20 t. 1 c. £122

Sulphur—
Madras, 4 t. 19 c. £50
Rouen, 5 31

Sulphuric Acid—
Talcahuano, 1 t. 2 c. £8

Zinc Chloride—
Bombay, 5 t. 13 c. 1 q. £100

GLASGOW.

Week ending February 4th.

Ammonium Sulphate—
Bordeaux, 20 t. 7 c. £250
Philadelphia, 10 3¾ 111
Nantes, 10 10½ 125
Barcelona, 55 8¾ 660

Benzol—
Rotterdam, 7 drms. £120

Caustic Soda—
Marahn, 51 t. 16 c. £521

Chemicals *(otherwise undescribed)*
Calcutta, £52

Chemical Guano—
Barcelona, 10 t. 18¼ c. £88

Chemical Products—
Rangoon, 175 c. £55

Coal Tar—
Boston, 25 t. £53
Bombay, 27¾ 77

Coal Tar Pitch—
Barcelona, 246 t. 10 c. £280
Bordeaux, 874 t. 15 c. £1,443
Rouen, 102 9 153
Boston, 76 2 160

Creosote Salts—
Philadelphia, 598 c. £75

Iodine—
Rotterdam, 8 cks. £2,340

Manure—
Rouen, 40 t. 8 c. £400

Painters' Colours—
Melbourne, £92
Bombay, £48 15s.
Calcutta, 7½ t. £86
Penang, 92¾ c. 12 lb. 52

Paraffin Wax—
Melbourne, 112 c. £210
Japan, 6 t. 3¾ 24 lbs. 177
Rouen, 1,055 1,698
Bilbao, 49 12¾ 1,694
Italy, 70¼ 248
Barcelona, 3 12 126
Hungary, 1 4¼ 20

Pitch—
Amsterdam, 398½ t. £583

Potassium Bichromate—
Antwerp, 101 c. £117
Philadelphia, 200 350
Rouen, 203½ 284
Japan, 5 t. 9¼ 170
Rotterdam, 2 cks. 20
Italy, 170½ c. 245

Salt Cake—
Antwerp, 266 t. 6 c. £540

Soda Ash—
Philadelphia, 3,546 c. £1,032

Sodium Bichromate—
Italy, 58 c. £90
Barcelona, 79¾ 102

Stearine—
Marahu, 10 t. 10 c. £446

Sulphuric Acid—
Rangoon, 25 t. 19½ c. £244

White Lead—
Sydney, 4 t. 12½ c. £103

HULL.

Week ending January 26th.

Bleaching Powder—
Bombay, 100 dms.
Naples, 34 cks.
Reval, 105

Calcium Sulphate—
Harlingen, 200 bgs.

Caustic Soda—
Fiume, 11 dms.
Konigsberg, 36
Trieste, 20
Venice, 50

Chemicals *(otherwise undescribed)*
Antwerp, 31 css. 15 cks.
Amsterdam, 11
Bremen, 2
Bergen, 20
Bombay, 1,059 370 pks.
Copenhagen, 52
Catania, 6
Christiania, 5
Dunkirk, 15
Drontheim, 342 slabs
Gothenburg, 39 19
Hamburg, 1
Harlingen, 10
Kurrachee, 300
New York, 100 pks.
Rotterdam, 2 6
Reval,
Trieste, 10
Venice, 6

Copper Sulphate—
Bergen, 4 cks.
Bordeaux, 50

Cotton Seed Oil—
Antwerp, 1,610 c.
Bremen, 100
Dunkirk, 101
Drontheim, 88
Flushing, 172
Gothenburg, 92
Hamburg, 2,311
Leghorn, 135
Rotterdam, 999
Stettin, 1,301
Stavanger, 41
Trieste, 100

Dyestuffs *(otherwise undescribed)*
Dunkirk, 1 ck.
Rotterdam, 1 cs. 2
Reval, 5

Farina—
Rotterdam, 8 cks.

Linseed Oil—
Amsterdam, 10 c.
Allesund, 52
Bergen, 120
Bordeaux, 74
Copenhagen, 24
Christiania, 149
Christiansand, 18
Hamburg, 71
Kurrachee, 55
Rotterdam, 20

Manure—
Dunkirk, 871 bgs.
Ghent, 705
Rouen, 257
Rotterdam, 1,289
Venice, 94
Valencia, 2,310

Ochre—
Rotterdam, 3 cks.

Painters' Colours—
Antwerp, 3 cs. 32 cks. 16 pks.
Amsterdam, 3 114 kgs.
Bombay, 118 19
Bordeaux, 6
Dunkirk, 26
Drontheim, 20 pks.
Genoa, 50
Ghent, 5
Harlingen, 1
Kurrachee, 1 41
New York, 100
Rouen, 14
Rotterdam, 1 2
Trieste, 20 dms.

Pitch—
Antwerp, 329 t.
Dunkirk, 67

Stearine—
Messina, 12 cks.

Yarnish—
Antwerp, 2 cks. 1 pk.
Amsterdam, 1 can
Bombay, 75 dms.
Copenhagen, 1 css.
Ghent, 14
Hamburg, 2 cks.

TYNE.

Week ending January 30th.

Alkali—
Rotterdam, 101 c.

Alum—
Pasages, 204 c.

Alum Cake—
Copenhagen, 31 cks.

Alumina Sulphate—
Rouen, 199 c.

Barytes—
Rouen, 300 c.

Barytes Carbonate—
Hamburg, 90 c.

Bleaching Powder—
Pasages, 410 c.
Gothenburg, 31
New Fairwater, 529
Rotterdam, 787
Lisbon, 219
Bergen, 213
Rouen, 199
Seville, 1,543
Antwerp, 2,287
Christiania, 548

Borax—
Seville, 21 c.

Caustic Soda—
Danzig, 58 c.
Bilbao, 210
Pasages, 149
Copenhagen, 50
Rouen, 141
Seville, 1,353

Litharge—
Rotterdam, 22 c.
Lisbon, 16
Rouen, 6
Hamburg, 10
Christiania, 18

Magnesia—
Lisbon, 28 c.
Bilbao, 169
Rouen, 3
Hamburg, 2

Phosphorus—
Seville, 8 c.

Phosphate Rock—
Danzig, 1,000 c.

Potassium Chlorate—
Antwerp, 20 c.

Soda Ash—
Fairwater, 40 c.
Rotterdam, 56
Lisbon, 218
Christiania, 223

Soda Crystals—
Pasages, 200 c.
Antwerp, 52

Sodium Silicate—
Bilbao, 223 c.
Seville, 927

Sodium Sulphate—
Copenhagen, 152 c.
Antwerp, 3,989

Sulphur—
Rotterdam, 201 c.
Rouen, 400
Antwerp, 250
Laurvig, 424

GOOLE.

Week ending January 20th.

Chemicals *(otherwise undescribed)*
Antwerp, 3 cks.
Boulogne, 3 pks.
Ghent, 12 12 dms.
Hamburg, 5
Rotterdam, 94

Coal Products *(otherwise undes.)*
Boulogne, 2 css.
Rotterdam, 33 cks.

Dyestuffs *(otherwise undescribed)*
Boulogne, 1 ck. 56 dms.
Ghent, 2 css. 1 36

Manure—
Ghent, 419 bgs.
Ostend, 218

Pitch—
Antwerp, 1,074 t.
Boulogne 15 cks.
Rotterdam, 24

GRIMSBY.

Week ending January 23rd.

Chemicals *(otherwise undescribed)*
Hamburg, 10 css. 2 cks.

Coal Products—
Dieppe, 152 cks

Pitch—
Antwerp, 62 t.

PRICES CURRENT.

WEDNESDAY, February 10, 1892.

Prepared by Higginbottom and Co., 116, Portland Street, Manchester.

The values stated are f.o.r. at maker's works, or at usual ports of shipment in U.K. The price in different localities may vary.

	£	s.	d.
Acids:—			
Acetic, 25 °/₀ and 40 °/₀ .. .. per cwt.	7/- &	11/-	
,, Glacial .. .. ,,		50/-	
Arsenic, S.G., 2000° .. .. ,,	0	13	6
Fluoric .. .. per lb.	0	0	3¾
Muriatic (Tower Salts), 30° Tw. .. .. .. per bottle	0	0	10
,, (Cylinder), 30° Tw. .. .. ,,	0	3	0
Nitric 80° Tw. .. .. per lb.	0	0	2¼
Nitrous .. .. ,,	0	0	1¾
Oxalic .. .. nett ,,	0	0	3½
Phosphoric, 1750° .. .. ,,	0	0	11½
Picric .. .. ,,	0	0	10¼
Sulphuric (fuming 50 °/₀) .. .. per ton	15	10	0
,, (monohydrate) .. .. ,,	5	10	0
,, (Pyrites, 168°) .. .. ,,	3	5	0
,, (,, 150°) .. .. ,,	1	5	0
,, (free from arsenic, 145°) .. .. .. ,,	1	7	6
Sulphurous (solution) .. .. ,,	2	15	0
Tannic (pure) .. .. per lb.	0	1	2
Tartaric .. .. ,,	0	1	1
Arsenic, white powdered .. .. nett per ton	11	5	0
Alum (loose lump) .. .. ,,	5	5	0
Alumina Sulphate (pure) .. .. ,,	5	0	0
,, ,, (medium qualities) .. .. .. ,,	4	15	0
Aluminium .. .. per lb. 2s. 8d. to	0	3	2
Ammonia, ·880=28° .. .. per lb.	0	0	3
,, =24° .. .. ,,	0	0	1¾
,, Carbonate .. .. nett ,,	0	0	3½
,, Muriate .. .. per ton	21	0	0
,, ,, (sal-ammoniac) 1st & 2nd .. per cwt.	35/- &	33/-	
,, Nitrate .. .. per ton	40	0	0
,, Phosphate .. .. per lb.	0	0	10½
,, Sulphate (grey), London .. .. .. per ton	10	10	0
,, ,, (grey), Hull .. .. ,,	10	8	9
Aniline Oil (pure .. .. per lb.	0	0	8¼
Aniline Salt ,, ... ,,	0	0	7
Antimony .. .. per ton	70	0	0
,, (tartar emetic) .. .. per lb.	0	1	0
,, (golden sulphide) .. .. ,,	0	0	10
Barium Chloride .. .. per ton	7	15	0
,, Carbonate (native) .. .. ,,	3	10	0
,, Sulphate (native levigated) .. .. .. ,,	45/- to	75/-	
Bleaching Powder, 35 % .. .. nett ,,	7	10	0
,, Liquor, 7 % .. .. ,,	2	10	0
Bisulphide of Carbon .. .. ,,	11	15	0
Chromium Acetate (crystal .. .. per lb.	0	0	6
Calcium Chloride .. .. per ton	2	5	0
China Clay (at Runcorn) in bulk .. .. .. ,,	17/6 to	35/-	
Coal Tar Dyes:—			
Alizarine (artificial) 20 % .. .. per lb.	0	0	8¼
Magenta .. .. ,,	0	3	9
Coal Tar Products			
Anthracene, 30 % A, f.o.b. London .. per unit per cwt.	0	1	2½
Benzol, 90 % nominal .. .. .. per gallon	0	2	5
,, 50/90 ,, ... ,,	0	1	10
Carbolic Acid (crystallised 40°) .. .. .. per lb.	0	0	5⅛
,, (crude 60°) .. .. per gallon	0	1	2
Creosote (ordinary) .. .. ,,	0	0	1
,, (filtered for Lucigen light) .. .. ,,	0	0	2
Crude Naphtha 30 % @ 120° C. .. .. .. ,,	0	1	0
Grease Oils, 22° Tw. .. .. per ton	2	5	0
Pitch, f.o.b. Liverpool or Garston .. .. .. ,,	1	14	0
Solvent Naphtha, 90 % at 160° .. .. .. per gallon	0	1	2
Coke-oven Oils (crude) .. .. ,,	0	0	3
Copper .. .. per ton	43	10	0
,, Sulphate .. .. ,,	14	15	0
,, Oxide (copper scales) .. .. ,,	45	0	0
Glycerine (crude) .. .. ,,	13	0	0
,, (distilled S.G. 1250°) .. .. ,,	45	0	0
Iodine .. .. nett, per oz.	0	0	9
Iron Sulphate (copperas) .. .. per ton	1	12	6
,, Sulphide (antimony slag) .. .. ,,	2	0	0
Lead (sheet) for cash .. .. ,,	11	15	0
,, Litharge Flake (ex ship) .. .. ,,	15	0	0
,, Acetate (white ,,) .. .. ,,	25	15	0
,, ,, (brown ,,) .. .. ,,	17	10	0
,, Carbonate (white lead) pure .. .. .. ,,	20	0	0
Nitrate .. .. ,,	20	10	0
Lime, Acetate (brown) .. .. per ton	6	15	0
,, ,, (grey) .. .. ,,	10	0	0
Magnesium (ribbon and wire) .. .. per oz.	0	2	0
,, Chloride (ex ship) .. .. per ton	2	7	6
,, Carbonate .. .. per cwt.	1	17	6
,, Hydrate .. .. per ton.	17	0	0
,, Sulphate (Epsom Salts) .. .. .. per ton	3	0	0
Manganese, Sulphate .. .. ,,	18	0	0
,, Borate .. .. per cwt.	2	15	0
,, Ore, 70 % .. .. per ton	4	5	0
Methylated Spirit, 61° O.P. .. .. per gallon	0	2	6
Naphtha (Wood), Solvent .. .. ,,	0	4	6
,, ,, Miscible, 60° O.P. .. .. .. ,,	0	4	1
Oils:—			
Cotton-seed .. .. per ton	18	10	0
Linseed .. .. ,,	20	0	0
Lubricating, Scotch, 890°—895° .. .. .. ,,	7	5	0
Petroleum, Russian .. .. per gallon	0	0	4½
,, American .. .. ,,	0	0	5½
Potassium (metal) .. .. per oz.	0	3	7
,, Bichromate .. .. per lb.	0	0	3¾
,, Carbonate, 90% (ex ship) .. .. .. per ton	18	10	0
,, Chlorate .. .. per lb.	0	0	5¾
,, Cyanide, 98% .. .. ,,	0	2	2
,, Hydrate (Caustic Potash) 80/85 % .. per ton	22	15	0
,, ,, (Caustic Potash) 75/80 % .. ,,	21	5	0
,, ,, (Caustic Potash) 70/75 % .. ,,	20	15	0
,, Nitrate (refined) .. .. per cwt.	1	2	6
,, Permanganate .. .. per cwt.	3	10	0
,, Prussiate Yellow .. .. per lb.	0	0	10¼
,, Sulphate, 90 % (ex ship) .. .. .. per ton	9	15	0
,, Muriate, 80 % (do.) .. .. .. ,,	7	17	6
Silver (metal) .. .. per oz.	0	3	5⅛
,, Nitrate .. .. ,,	0	2	10
Sodium (metal) .. .. per lb.	0	4	0
,, Carb. (refined Soda-ash) 48 % .. nett per ton	6	2	6
,, ,, (Caustic Soda-ash) 48 % . ,, ,,	5	5	0
,, ,, (Carb. Soda-ash) 48% .. .. ,, ,,	5	7	6
,, ,, (Carb. Soda-ash) 58 % .. .. ,, ,,	6	7	6
,, ,, (Soda Crystals) .. .. .. ,, ,,	3	9	0
,, Acetate (ex-ship) .. .. ,,	17	10	0
,, Arseniate, 45 % .. .. ,,	10	10	0
,, Chlorate .. .. per lb.	0	0	7
,, Borate (Borax) .. .. nett, per ton.	29	10	0
,, Bichromate .. .. per lb.	0	0	2¾
,, Hydrate (77 % Caustic Soda) (f.o.b.) nett pr. ton (10 ton lots)	11	5	0
,, ,, (74 % Caustic Soda) ,, ,, ,, (10 ton lots)	11	5	0
,, ,, (70 % Caustic Soda) ,, ,, ,, (10 ton lots)	10	5	0
,, ,, (60 % Caustic Soda) .. ,, ,, (10 ton lots)	9	2	6
,, ,, (60 % Caustic Soda, cream) (f.o.b.) ,, (10 ton lots)	8	17	6
,, Bicarbonate .. .. ,,	6	15	0
,, Hyposulphite .. .. ,,	7	15	0
,, Manganate, 25% .. .. ,,	9	0	0
,, Nitrate (95 %) ex-ship Liverpool .. .. per cwt.	0	9	6
,, Nitrite, 98 % .. .. per ton	30	0	0
,, Phosphate .. .. ,,	15	10	0
,, Prussiate .. .. per lb.	0	0	8
,, Silicate (glass) .. .. per ton	5	7	6
,, ,, (liquid, 100° Tw.) .. .. .. ,,	4	7	6
,, Stannate, 40 % .. .. per cwt.	3	5	0
,, Sulphate (Salt-cake) .. .. per ton.	1	17	6
,, ,, (Glauber's Salts) .. .. ,,	1	15	6
,, Sulphide .. .. ,,	7	15	0
,, Sulphite .. .. ,,	6	12	6
Strontium Hydrate, 100% .. .. ,,	8	10	0
Sulphocyanide Ammonium, 95 % .. .. per, lb.	0	0	7½
,, Barium, 95 % .. .. ,,	0	0	5
,, Potassium .. .. ,,	0	0	8
Sulphur (Flowers) .. .. per ton.	10	0	0
,, (Roll Brimstone) .. .. ,,	8	0	0
,, Brimstone : Best Quality (nominal) .. ,,	6	10	0
Superphosphate of Lime (26 %) .. .. ,,	2	7	6
Tallow .. .. ,,	26	10	0
Tin (English Ingots) .. .. ,,	93	0	0
,, Crystals .. .. per lb.	0	0	6⅞
Zinc (Spelter) .. .. per ton	21	7	6
,, Chloride (solution, 96° Tw.) .. .. ,,	6	15	0

In issuing their balance sheet for the half-year June to December, 1891, the directors have recommended a dividend at the rate of 7 per cent. per annum on the preference shares, and 5 per cent. per annum on the ordinary shares.

Owing to the absorption of the subscribed capital for other purposes, it was necessary to draw on the reserve fund for the working capital. After paying the dividend for the last half-year, £27,500 has been placed to the reserve, and the balance of £3,913 carried forward.

It is rather unfortunate that the sales of salt in 1891 have been over 150,000 tons less than in the previous year. Foreign competition is held responsible for this to a certain extent, and presumably makers outside the Union have had something to do with the matter. We have already gone into the question of the foreign competition, and it would be as well perhaps to let the matter pass now without further comment, since the Union has decided to meet competition by returning the compliment. Not only have reductions been made in the price of Union salt, but every effort to economise is being made, by making the centres of production at those works which, owing to their position, can produce at the lowest cost.

But the reformation does not end here even, for in addition to carefully controlling the cost of production, seeing that the Union can produce considerably more salt than it wants, those works which, if renovated, could not even then produce salt economically, are to be dismantled. It will thus be seen that the directors are making a determined effort to combat the adverse circumstances which have attended the progress of the Union in the past, whilst their *modus operandi* augurs well for their ultimate success.

Lastly, the distribution system, which has been so much discussed, is now under consideration, and the directors are making arrangements to enable them to take advantage of the variations of the markets, without interfering with the direct trading rights in the Cheshire and Worcestershire districts.

Thus the competition which has been so keenly felt by the Union is likely to be checked, being foist with its own petard.

THE INSTITUTE OF CHEMISTRY.

The black cloud that goes before the storm is growing larger and larger; the agitation that commenced some five or seven years ago against the management of the Institute of Chemistry, has grown none the less feeble by the process of time. For many years past, consulting and analytical chemists in actual practice, public analysts, and those trained chemists who have charge of the laboratories of many chemical works, have indeed felt it a grievance that the administration of the affairs of the Institute should be drifting more and more into the hands of mere professors of chemistry. As a consequence, professional chemistry is ignored, the examinations for admission of associates slovenly in the extreme, ill-regulated, and bad. It is now sought to change all this, and every Fellow and Associate who has the welfare of the Institute at heart, will do well to vote for the *amended list* of Council.

An influential association has been formed to attempt a better carrying out of the Charter of the Institute, and we hope every Fellow will read each circular he receives from this source, and not consign it direct to the waste paper basket, as is so often done with communications received from the Institute.

COLOUR TESTING.

THE following is an abstract of a paper read before the A of Master Painters and Decorators of Pennsylvania, the annual meeting this year, by Mr. W. C. Wilson, who sa the remarks that follow I can prove of service to you in en to more readily discriminate between the good and bad i materials, my time and trouble will have been well expended

What is the object of making examinations and tests? secure from the seller just what the material sold is represen Is that not the real contention between the paint consume paint maker? Is it not the burning question of the momen not all other issues be speedily determined when this fundau of honest labelling is satisfactorily disposed of? An i material, whether or not it possesses paint properties, sho offered under the name of a more valuable one. Labels an marks should correctly indicate contents of packages.

Of course all articles of a proprietary nature are to be a the buyer for value according to his faith in the manufacturer, ing to his experience in the use of them.

The standard of quality of all such things is that which is fixed by the maker of them.

Messrs. X. Y. & Z. offer to the trade their "*ne plus ultra* red," which may be composed of fine sand and a coal-tar dy may offer their "Olympian mixed paint" which may be co terra alba, zinc white, and rosin oil. If in the one case the not claim that the red is one of the vermilions of recognise and in the other that the article is white lead and linseed material recognised by the trade as orthodox, the buyer fault with anyone but himself if he be tempted to use one o on account of their supposed cheapness or for any other finds himself sadly disappointed in the results obtained from

White lead, zinc white, chrome yellow, Prussian blue, turpentine, or any other material which has specific and composition under an established name, should be sold w stitution or sophistication of any kind, and the buyer ha demand from the seller that there shall be delivered to him the name literally implies.

I repeat that the chief object of examinations and tests delivery of what is sold us. Questions of what may be material or what is more durable are largely to be determ experience of the practical men, and are for subsequent co

Now there is a certain unwillingness on the part of making tests themselves, which, along with their scepticis made for them by others, permits the continuance of fraud and I say at the risk of being unpleasant, that the mas themselves are responsible in great measure for all the im paint makers.

Colour grinding is, and probably always will be a distinc but if the business in paints in general were on the same ba white lead business now is on, master painters would not ha complain of in adulteration. The white lead business was as it now is. At one time the manufacturers of white lea generally grind their product in oil as they now do. I k firm or corroders, which, in its early history, disposed o entire product of dry lead to a grinder, who did not grind of it pure—the usual practice being to add an equal weight

The white lead grinding business was a separate one corroding, but it was not long ago found that the scrupul could not hold out against the unscrupulous one; that i continue to give pure white lead profitably, unless the corr guarantee to him a profit which is frequently impossible. outcome has been that in several instances large paint gri interested themselves in corroding works. Some grinders i on a guaranteed profit, taking practically the position that t of white lead is legitimately a separate business from that o but I think the tendency of industrial development is ant such a position. The tendency is to unify, not to separate gate, rather than to preserve the individual unit.

To cheapen cost of production, and permit the distribu consumer of a larger quantity of the products of industry, it to save all the extra expenditure which is involved in the s closely correlated operations. Of course, if one lives in th a business which yields now comparatively small retur naturally beseech the men of to-day not to go fast; but I t bound to recognise the tendencies of the times when fo reason or the irresistible laws of commercial development.

Because the white lead men choosing to push the sale o in oil instead of in the dry state, have established their purity of which is unquestioned, the painter to-day who is in the matter of mere purity of white lead is simply a victi indifference or cupidity.

I think most of you will be very surprised when white leads are amined critically, to see what differences there are between well-nown brands in all the fine points a well-prepared lead should ssess.

Let it be known that white lead is liable to be examined at any time men of recognised ability, who would use as a standard for compari-n an article that was well prepared, possessed the requisite fineness, acity, and all the other qualities which a good white lead should ve; and that the results of each examination would be made known the master painters—corroders would consign much to the red lead nces which, under present conditions, goes to the customers questioned.

I am not inclined to think that State action in employing a chemist ply to analyse will be of much general influence, though even ranted by local advantage. A plan presents itself to my mind ich I think is practical and feasible. It is for the National Associa-n to secure pure goods of selected quality, such quality as is readily ntainable, and make them the national standards. This work can be governed entirely, but only assisted, by the chemist, for the on that the practical examinations are of much greater importance in ny instances than the chemical. These standards, then, should be pared in considerable quantity, put up in convenient packages, and rved for the call of the local associations in affiliation with the ional.

A schedule of specifications for testing them should be prepared by pecial committee, consisting of an expert practical examiner, such instance as large manufacturers employ for their factory guidance; chemist versed in paint analysis and a practical master painter. ese specifications in the hands of any intelligent and studious prentice, together with the standard samples, would insure deliveries to standard.

Going closer into my subject, which is necessarily very comprehensive, ill say that it is hardly possible to lay out simple rules for examina-n that will apply equally to all paints. Each different test must be plied with some knowledge of the general properties of the article ted and its intended use.

Even the most generally used and the most effective simple test, that strength or staining power, must be used with precautions, if proper nclusions are to be drawn from its results and should as a rule be ly one of several tests, and is seldom a conclusive one by itself.

In making an examination of a paint these features must be con-dered, but, as I have said, according to the character of the material.

1. Purity of the material.

2. Purity of the tone; brilliancy; richness; which indicate the mount of care in selection.

3. Fineness of grinding or preparation; this means the degree of the vision of the particles and upon the completeness of such division ll depend.

4. Its spreading capacity.

5. Its body. This applies, of course, only to opaque or semi-opaque olours. Body is opacity and means capacity to conceal the surface to hich the paint is applied and must not be confused with spreading. is an inherent quality.

6. Its staining power or tinting strength with white or other colours.

7. The quality or purity of the tint with white.

8. If a paste colour, the consistency of the paste.

9. Transparency of transparent colours and the quality of the trans-rency.

We all know what articles are principally used to adulterate cheaper gments. Some of the articles which are recognised constituents of ne paints, such, for instance, as sulphate of lime or silica are only lterants when they are added surreptitiously to those articles in which y have no recognised place as components. As for instance sulphate lime in venetian red and silica in ochre. White clay, or kaolin, is te frequently used as an adulterant. Clay is a silicate of alumina would occur naturally to a greater or lesser degree in ochre, na, umber, vandyke, brown and earth paints generally.

Carbonate of lime is very occasionally found naturally in some of the th pigments, but generally in very small quantities, and when found uantities exceeding 5 or 10 per cent. must be considered an inten-al adulterant. The exceptions to the rule would, of course, be rose k, or any article particularly in the lake colour line, in which bonate of lime is used as the medium for carrying the organic louring matter.

(To be continued.)

SUBSIDENCE IN CHESHIRE.—As if to emphasise the compensation inquiry now being held at Northwich, an enormous subsidence k place last week on the site of the old Wheatsheaf Hotel, at the of Castle Hill. A cavity some forty feet across has gone in, carry-down the footpath and half of the main roadway. Across the road ther immense hole has formed under the office of Mr. J. J. Dixon litor, which building is in danger of being swallowed up.

THE PURIFICATION OF THE RIVER RIBBLE.

ON Monday, the 8th inst., the monthly meeting of the Joint Committee for the Purification of the river Ribble and its tributaries was held at the County Hall, Preston. In the absence of the chairman of the committee, the Right Hon. J. T. Hibbert (chairman of the County Council), the chair was taken by Mr. Alderman Peace, the other members present being—Mr. J. Satterthwaite, Mr. Alexander Bell, Mr. T. Lightbown, Mr. W. Smith, Mr. T. Burrows, Mr. J. M. Ferguson, and the Rev. R. C. Fletcher.

The Clerk (Mr. Hulton) reported that although the Right Hon. J. T. Hibbert was much better, he was still unable to attend, but hoped to be able to resume his duties during the present month.

The following report upon the various causes of pollution of the river Ribble and its tributaries was read from Mr. Naylor, the chief inspector:—

Preston, Feb. 8th, 1892.

The Chairman and Members, Ribble Joint Committee.

Gentlemen,—I beg to report that since the last meeting of this committee the north-eastern section of the Ribble Basin has been surveyed generally with the object of obtaining a fairly accurate idea of the present state of pollution.

This section, with a population of about 200,000, extends from the entrance of the river Ribble into Lancashire at Smithie's Bridge to the Calder confluence below Whalley, and includes the latter river and its affluents.

In this area of about 100 square miles the pollution is serious, both with regard to local authorities and manufacturers.

Of the local authorities it may fairly be asserted that none is dealing with the sewage in a thoroughly satisfactory manner. Out of ten whose districts are wholly or in part within this section of the basin the following do not intercept sewage in any way, but suffer it to find a route to the water courses as circumstances permit:—

1, Clitheroe (Borough); 2, Clitheroe (Rural Sanitary District); 3, Burnley (Rural Sanitary District); 4, Padiham (Urban Sanitary District).

This statement refers only to those portions of the districts contiguous to the watercourses with which I am concerned, and it should also be allowed that in some instances steps are being taken to remedy this state of things; and concerning these steps Mr. Hulton is endeavouring to become cognisant.

Two other authorities, viz., Nelson (Borough) and Oswaldtwistle (Urban Sanitary Authority), intercept their sewage, but only to discharge it, *en masse*, into natural watercourses, the Pendle water and Tinkers' Brook respectively. At Nelson, precipitation works and filter beds are in progress, but meanwhile about half a million gallons of domestic sewage daily are delivered crude into the Pendle water.

The remainder both intercept street sewage: Colne (Urban Sanitary Authority), Accrington and Church (Joint Sewerage Board), and Burnley (County Board).

At Colne, the tanks are used as subsidence tanks only, no precipitant being added, but an area of 24 acres is offered for filtration. The raw sewage is strictly urban in character, and comparatively little subsidence takes place in passing through the tanks. A better outlet effluent would doubtless be attained were some precipitant used which would also absorb some of the dissolved organic matter. The outlet effluent is clear, but clarity is no criterion of purity.

At Accrington and Church the sewage is conducted to substantial precipitation tanks for treatment by lime only. This, however, must be characterised as ineffectual, especially so since the effluent is turned into the Hyndburn immediately without filtration. The action of lime is principally mechanical and slightly absorptive, with a tendency to produce an alkaline and easily decomposed effluent. An additional precipitant should be used. Some portion of the Accrington rain sewage still goes into the brooks, but the surveyor asserts that this is being cut off.

At Burnley, treatment by lime only is the method in vogue, and the same remarks apply as to Church and Accrington. At neither place was a good effluent in evidence, neither could it be expected. A filtration area is now being laid out.

None of the forementioned authorities has a separate system for road and storm water. The Ribble is much polluted by what is designated "storm water"—in reality diluted sewage, and not always that.

Manufacturers may be divided into two classes—those who have done nothing at all to lessen pollution, and those who (with perhaps two exceptions) have done as little as possible. Comparisons that can be made so far show manufacturers to be more flagrant pollutors than local authorities.

Visits have been made to four paper works, six dye and calico printing works, one alkali works, one dye works, one bleach works, three collieries, and two tan yards, all of which turn refuse into the Ribble or some tributary thereof. Particulars of these are noted in the reference book, and marked on the large plan.

Interviews with the principals were granted in all instances, and the only opinions to be deduced from these interviews is that manufacturers are just awaiting the action of this committee.

It may be deemed worthy of note that on every hand along the river banks, the hundreds of firms using the river water in condensers cause, in the aggregate, considerable pollution. Where surface condensers are installed there is no pollution, but these occur very rarely. Yet condensers, while condensing steam, also condense some hundreds of gallons of volatilized oil per diem, which enters the river very perceptibly. It is not suggested that any objection be taken to this just now, but if pressure is brought to bear upon manufacturers *re* their present refuse outlets, it will be the easiest matter in the world to connect refuse pipes with condenser outlets, which is already done in some instances.

Should further powers be sought by this committee, it might be well to insist upon all condensers, inclusive of inlet and exit pipes, being left accessible to inspectors.

A case in point was that of Messrs. Allen & Co., Baxenden, who turn some thousands of gallons of water per diem, polluted with dye wash, soda, soap, fat, alumina, etc., not into the brook, but into the premises of their nearest neighbours, the Baxenden Spinning Co., from whence it issues into the brook under the cognomen of "condensed water," after passing through condensers belonging to the latter firm.

Other more conspicuous pollutors are :—

1. Calico Printers.—Messrs. Steiner and Co., Accrington, turn into river Hyndburn daily two million gallons of water polluted with dye wash (principally alizarin), chlorine water, soap and soda liquors, and alum solutions. There is also a little solid matter in suspension (due to the use of chalk for neutralisation in the becks), and small quantities of arsenical and tin liquors. No attempt to clarify, subside, or recover soap is made.

Messrs. Grafton and Co., Accrington.—Similiar liquors to above turned into Wood Nook, with exception of soap and soda liquor, for which there is a recovery process here as well as subsidence tanks.

Collieries.—Exors. Colonel Hargreaves: Shale tip on river Brun bank, at Rowley Pit, Blackburn, and dirty water lower down, which is used for slaking at coke ovens.

Gasworks.—Colne Gas Company: Two cinder tips out of retort house right into river. Also a large heap of impure lime from purifiers, and at date of visit, ammonia liquor was leaking from scrubbers into river.

Tanneries.- Messrs. T. and W. Sagar, Colne: Lime, blood, and bark, as well as dyes formed from the intermixture of this refuse. There is an apology for a subsidence tank, but its effect is nil. The whole of the so-called subsidence tanks right along the line may be regarded as a mere farce. They are just allowed to become and remain full. The volume of liquor flows *over* rather than *through* them, and unaltered in any way, except for the worse. Frequent and strict inspection will render these of more value.

Paperworks.—Burnley Papermaking Company: Outlet from works convey soda liquor, waste pulp (bottom washings), chlorine water, mineral dyes, and lime dregs. There is a series of useless tanks, but no soda evaporating plant.

Messrs. Carlisle and Co., Clitheroe: Effluent alkaline and charged with solids and chlorine water. A substantial incinerating plant is installed, but tanks are not of much use.

Alkali Works.—Messrs. J. Riley and Sons, Hapton: Green Brook, a tributary of the Calder, flows under the premises of this firm, and is highly discoloured afterwards. What this colouration is will be determined exactly when the laboratory is completely fitted up, but it is probably only carbonate of lime and a trace of sulphur from the drainage of a waste alkali tip. The former would account for discolouration and the latter for a very disagreeable smell. To prevent this, Messrs. Riley do everything that is reasonable. The present alkali waste is treated by Chance's patent process for sulphur recovery, and the heap of many years' standing under which the brook flows is pierced by a system of arterial drains, from which the drainage is pumped up for sulphur recovery also.

These appear to be the only likely sources of pollution on the premises, but further visits will be paid in due course.

I am gentlemen,

Your obedient servant,

Wm. Naylor.

After consideration of the foregoing report it was resolved: That in the opinion of this Joint Committee it is desirable that in all cases a conciliatory letter be written to each authority or person before any legal proceedings were initiated.

It was resolved that the subject matter of the report be dealt with under the heads of solid sewage and manufacturers, and that letters be written to the undermentioned persons calling attention to the provisions of the Act with regard to putting or throwing solids into the rivers, and that they be requested to refrain from doing so in the uture:—H. Robinson, Clitheroe; Colne Gas Company, Colne; Executors of the late Col. Hargreaves, Burnley. That letters be written to the under-mentioned authorities, calling attention to the provisions of the Act relating to the placing or putting of liquid sewage into the river, and requesting that they will take steps to prevent any further offences against the Act:—The Borough of Clitheroe, the Clitheroe Rural Sanitary Authority, and the Padiham and Hapton Urban Sanitary Authority.

It was also resolved that the further consideration of the report, so far as it relates to pollution by manufacturers, be postponed to a future meeting.

The Mersey and Irwell Joint Committee were directed to be written to, and asked to forward to this committee a copy of Professor Roscoe's report, when presented.

The Offices Sub-Committee reported they had accepted the estimate of Mr. James Smirk to supply furniture and fittings to the laboratory for £25. 5s., and from Mr. T. H. Clark, for plumbing, gas fitting, &c., for £20. The committee approved the tenders.

The Clerk submitted the report of the Finance Committee, which recommended various accounts for payment; and he also reported that the whole of the precepts served upon various contributory authorities for the purposes of carrying out the powers vested in this committee had been honoured, and there was now in hand a sum of about £800.

BRINE PUMPING SUBSIDENCES IN CHESHIRE.

GOVERNMENT INQUIRY.

In the Drill Hall, Northwich, on Thursday last week, Colonel W. M. Ducat, R.E., Local Government Board inspector, commenced an inquiry into the applications of a number of landowners and local authorities round Northwich for the formation of compensation districts under the Brine Pumping (Compensation for Subsidence) Act, 1891. One application was by owners of land in the parishes of Church Lawton and Sandbach, the chapelry of Witton-cum-Twambrook, and the townships of Wincham, Marston, Marbury, Anderton, Barnton, Winnington, Hartford, Castle Northwich, Northwich, Leftwich, Lostock Gralam, Shurlach, Over, Marton, Darnhall, Weaver, Wimboldsley, Clive, Stanthorne, Croxton, Ravenscroft, Biley-cum-Yatehouse, Kinderton-cum-Hulme, Middlewich, Newton, Rudheath, Birches, Newhall, Whatcroft, Shipbrook, Davenham, Eaton, Bostock, Moulton, Wharton, Tetton, Moston, Bradwall, Wheelock, Hassall, Bechton, Odd Rode, and Alsager. It was also proposed that the parish of Church Minshull and the townships of Elton, Minshull Vernon, Warmingham, Church Coppenhall, and Haslington, should be included in the proposed compensation district. The Local Board for Winsford separately asked that a compensation district should be formed out of Winsford and the townships of Marton, Weaver, Wimboldsley, Clive, and Moulton.—Mr. Pember, Q.C., and Mr. F. Marshall, appeared in support of the memorial from the landowners, and also for Brunner, Mond, and Co., Mr. Balfour Browne, Q.C., and Mr. G. M. Freeman for the Winsford Local Board and the Salt Union; Mr. A. H. Lloyd for the Middlewich Local Board and the Middlewich salt proprietors; Mr. Cowley for the Northwich Local Board; Mr. J. J. Howitt for Messrs. Bowman Thompson, and Co.; and Mr. A. E. Stringer for the Sandbach Local Board.

Mr. Pember, in opening the case for the first memorialists, said that the district of which those for which he appeared desired that a compensation district should be formed would, speaking roughly, form a parallelogram nine miles long, and about the same in width, and would comprise about 64,000 acres of land. In fact it might be said to practically exhaust this part of the salt field. The question they had to ask themselves was how could those who asked that this salt district should be cut up into a number of small districts for the purpose of taxation say that the damage done at Northwich was all owing to pumping at Northwich, and the damage done at Winsford was all owing to pumping at Winsford? The memorialists for whom he appeared said that it was absolutely impossible to say that such was the case.

If the division into districts was made, it was intended that the district or districts so made should be permanent, and it would not do to run the risk of doing any injustice. As far as they knew geologically, if there were no pumping at all at Northwich, pumping at Winsford might in the long run bring down the town of Northwich. The upper portion of the salt at Northwich was 58ft. below Ordnance datum; at Winsford it was 112ft. below; while at Lawton, beyond Sandbach, it was 120ft. above Ordnance datum. The floor of the bottom bed at Northwich was said to be 246ft. below Ordnance datum, and at Winsford it was 393ft. below. It would therefore seem probable that the flow of the brine would naturally be down from Northwich to Winsford, and that therefore a pumper at Northwich would be less likely to do damage to land at Winsford than one at Winsford would be likely to do damage to land at Northwich. It was not necessary for them to claim that the

trict of Cheshire should be made one district, nor was it neces-
r them to prove that actual damage was done at Northwich by
at Winsford. It was sufficient for them to show that the proba-
was that such damage might be done. When the inspector was
however, to make Northwich a district, and make Northwich
esponsible for the damage done in the neighbourhood of North-
nd to make Winsford alone responsible for the damage which
ne at Winsford and in its neighbourhood, then he (Mr. Pember)
k for absolute proof that Winsford might not be responsible for
done at Northwich. The amount of brine pumped annually at
ich was equivalent to 400,000 tons of salt, 1,000 gallons of
eing equal to one ton of salt. At Winsford 800,000 tons of salt
oduced, at Middlewich 50,000 tons, and at Sandbach 80,000
Of the 400,000,000 gallons pumped at Northwich, 150,000,000
were abstracted by Messrs. Brunner, Mond & Co, but they did
tract brine for the purpose of making salt, but for the purpose of
t in the manufacture of various chemicals. The greater portion
remaining 250,000,000 gallons was pumped by the Salt Union,
believed also that the Salt Union were the chief pumpers at
rd. The amount of damage done at Northwich per annum was
than that done at Winsford, because Northwich was a consider-
wn, and Winsford was to a much greater extent made up of
tural land. The consequence of the Salt Union going away to
rd, in case Northwich was made into a separate district, would
efore that Messrs. Brunner, Mond & Co. might be left as the
ine pumpers at Northwich, and might therefore have to pay for
ole of the damage done there. By forming these small districts
re the Local Government Board might be doing an injustice;
t could be shown that the damage done at Northwich was and
e entirely owing to the pumping done there, and the damage at
rd by the pumping done there, that the theory about the con-
of the brine and its motion was false, and that these two
s would represent two separate basins absolutely unconnected
ch other, then the inspector would have to act upon that proof;
doubted very much, indeed, whether there would be anything of
d forthcoming.

E. T. Ward, surveyor, Northwich, was the first witness called.
e evidence as to the different subsidences in the neighbourhood
hwich. He said that rock mining was principally was carried on
ally in Northwich. In the cases of those mines from which rock
s taken, when water got into them the pillars went, and when the
went the surface followed. That process had gone on in Northwich,
was not aware that it had done so in Winsford. He had heard
e salt made at the two places was different in quality, and he
hat at Northwich a coarse salt was made, while that made at
rd was much finer. He did not think it possible, from his
dge of the district, to fix upon any definite line beyond which
ould not flow.

ssor Boyd Dawkins said he had made himself well acquainted
e geology of Cheshire, and particularly with that of the salt
The area which it was proposed by the memorialists should be
into one district included all the places in which subsidences
e proved to have taken place through pumping in modern
Looking at the geological sections of the districts of Northwich,
wich, and Winsford, he had very little doubt that the upper
er beds in each place were continuations of the same beds, and
as he knew they had always been treated in the geological
as two groups of beds, continuous from one to the other. Look-
he relation of the subsidences which had taken place at Sand-
e had very little doubt that those subsidences implied that there
lerneath the intervening area the same salt field. He could
ibt for a moment that the areas of subsidence which were
d in between the different places were caused by pumping, and
ere must be therefore a continuity of salt between the places.
sidered it utterly impossible to fix any limit which would be an
e boundary between the brine coming into one set of pumps
t coming into another set.

ssor Boyd Dawkins, cross-examined by Mr. Stringer, said that
d his opinion that the saltfield was continuous between North-
Winsford, and Middlewich upon the fact that between these
here were intervening subsidences. He did not consider there
ground for the assumption that the rock at Sandbach was in a
e basin. The level of the rockhead at Wheelock was 110 feet
ordnance datum, and at Lawton 115 feet above it. The pro-
was that any pumping at Lawton or Sandbach could not draw
om Northwich, Winsford, or Middlewich.

Stringer: Would it not therefore be unfair to incude Sandbach
trict which would have to pay for subsidence at Northwich and
d?

ssor Boyd Dawkins: Well, I really cannot give you "yes" or
for the very good reason that there are a great many considera-
volved in the question of one district or several.

Stringer: It simply amounts to this—this inquiry is for forming,
possible, an equitable district. Would it be fair to charge Sandbach with damage which it could not possibly cause according to your own theory?

Professor Boyd Dawkins: I should be inclined to say not.

Re-examined by Mr. Pember, Professor Boyd Dawkins said that if it was correct, as Mr. Balfour Browne had suggested, that brine was found at a higher level in the pumps at Middlewich than it was at Billinge Green that fact would militate against the notion that brine from Billinge Green was being extracted at Middlewich, but he had evidence quite of a contradictory nature. At Yeoman's shaft, Middlewich, the brine rose 50 feet above the ordnance datum, and the level of Billinge Green water was 83 feet above ordnance datum. Even if this were not the case he did not think it would militate against the possibility of the water coming to Middlewich under pressure from some place still further off. The water that came underground might have come from some more distant place under pressure to Middlewich.

In reply to Mr. Lloyd, he said that in 1881 he stated that brine never ran on the lower surface, but on the upper surface. The only case where the action was contrary was Riversdale.

The inquiry was adjourned.

RIVER POLLUTION.

AT the last meeting of the Cheshire County Council, Mr. T. W. Killick (Altrincham), who proposed the adoption of the proceedings of the Rivers Pollution Committee, asked the Council to present a petition in support of the Rivers Mersey and Irwell (Prevention of Pollution) Bill. The bill, he said, asked for further powers to deal with the question of pollution, and also that the procedure might be simplified and cheapened. Sir W. H. Houldsworth and Sir H. Roscoe had backed the bill for Manchester, and Mr. J. W. Sidebottom and Mr. Brunner for Cheshire, and other Lancashire members had also backed it. Although there was not much to show, yet a great deal of work had been done. The Chairman of the Ship Canal Company had called their attention to the tipping of cinders into the river, and he believed the courtesy and firmness of their chief inspector had done much towards stopping the practice One or two authorities raised objections, but he believed that in every case they had promised to give attention to the matter. One individual, who strongly fought against the wishes of the Committee, had climbed down, and done as the Committee desired. The next matter to be taken up would be the question of sewage, and there was no doubt that a great deal of difficulty would be experienced in that work. He might mention the case of Macclesfield, where the authorities had stated that they were saving money by doing nothing. At Bury also, in Lancashire, they were doing nothing while they settled a dispute with their ground landlord, Lord Derby. It would be well for authorities and individuals to put their houses in order with the help of the Committee, because the Committee were determined that they would carry out the powers entrusted to them. With regard to the pollution of rivers by manufacture, Sir H. Roscoe, M.P., had promised to advise the Committee.

Alderman Dr. Hewitt (Northwich) seconded the motion, observing that people who, after sixteen years of the existence of a law providing against river pollution, pleaded for further delay or pleaded ignorance, must be dealt with firmly, although kindly. ("Hear, hear," and laughter.)

The resolution was passed.

The Lancashire County Council also adopted the report of the Parliamentary Committee.

EFFECT OF TEMPERATURE ON QUININE SOLUTIONS.

M. L. PRUNIER (*Journ. de Pharm. et Chim.*) has investigated the conditions under which the testing of quinine sulphate by means of ammonia may be most advantageously conducted. He examined the composition of the deposits formed at various intervals during the cooling of a saturated solution of commercial sulphate which had been raised to a temperature of 100° C. It was found that between 100° and 90° hardly any of the salt was deposited. The deposits formed between 90° and 50° varied in their composition, and were tolerably pure. Here, then, we have a very simple method of purifying the commercial product. On the other hand, crystals thrown down at a temperature of 50° to 40°, contained a great deal of sulphate of cinchonidine, which was most abundant between 35° and 40°. It was ascertained that the proper filtration temperature when testing quinine sulphate with ammonia, was one of about 15°, this being the degree at which different samples are best compared with one another.

THE DECOMPOSITION OF WATER.

LORD Rayleigh delivering a lecture at the Royal Institution on the decomposition of water, recently, explained the latest methods of doing so by experiments. And said, in order to form water it was necessary to take two volumes of oxygen to one of hydrogen. From that point of view the constitution of water was perfectly well known. But there was also the question of the relative weights of the two bodies, and how far the ratio of two to one really represented in the matter of volume the facts of the case. If the ratio in volumes were always the same the question of weight would be the same as that of the relative densities of the two gases. In round numbers the weight of oxygen was 16 times that of hydrogen. According to Prout's law these ratios were always represented by some exact multiple. Thus if hydrogen was taken as the unit, oxygen would be 16 and carbon 12. The question of atomic weights and relative densities was primarily experimental, but there was great danger of twisting *data* so as to meet the requirements of a preconceived idea. The investigations of chemists with respects to hydrogen and oxygen had varied, but not within great limits. In 1842 Dumas thought that the weight of oxygen was 15·96 times that of hydrogen, and Regnault in 1845 came to the same conclusion. It was, of course, not improbable that this slight deflection from the exact number 16 arose from error of calculation. For a long time this question slumbered, and it was not for 40 years that attention was again directed to it. He had himself in 1888 arrived at the conclusion that the right conclusion that the right proportion was 15·884 to one; and other chemists, both in Europe and America, had published the results of their inquiry, which all gave figures between 15·7 and 15·9. The real difficulty arose from the extraordinary lightness of hydrogen, which was only $\frac{1}{14}$th as heavy as the air. The glass in which the weighing was done might be 200 grammes, whilst the hydrogen contained therein was only $\frac{1}{10}$th of a gramme. Our brass and platinum weights were accurate enough to record infinitesimal weights; but that was not the crux. The atmospheric conditions might cause a greater disturbance than the weight of the hydrogen. To meet this difficulty Regnault had devised a method of weighing two glass vessels as similar to each other as possible against each other, so that each would be affected in like manner by any sudden changes of external conditions. The effect of moisture or change of barometric or thermometric conditions might be very different as between platinum weights and glass; but with two glass vessels constructed precisely alike the difficulty was eliminated. Lord Rayleigh then explained and illustrated the decomposition of water and the desiccation of the hydrogen so as to make it absolutely free both from oxygen and moisture, which was effected by means of passing it through phosphoric anhydride.

SLAG PAINT.

AMONG the papers presented at the recent Glen Summit meeting of the American Institute of Mining Engineers was one by Mr. A. Sahlin, of New York City, describing the utilisation of puddle and reheating slags for paint stock. According to Mr. Sahlin, these slags are being used with much success, and command as high as £6. to £8. a ton for this purpose. The slag is ground down to an almost impalpable dust by means of a crusher and a disintegrating machine or pulverizer. Samples of the slags used at the works at Boonton, N.J., have shown the following chemical composition:—

	Puddle slag.	Heating cinder.
FeO	52·430	71·290
Fe_2O_3	19·620	
MnO	6·410	0·210
CaO	0·810	—
Al_2O_3	0·380	7·780
SiO_2	16·390	20·060
P_2O_5	3·840	0·270
S	—	trace.

The cinder gives best results, but both the slags are said to make good paint stock. Mr. Sahlin described at length the machinery used, and stated that the dust produced is so fine that it cannot be measured by screens, and is good enough for any high grade paints. When mixed with linseed oil and ground on an ordinary burr mill it makes up into a dark olive-green colour, so neutral in its tint that an addition of from three to 15% of colouring matter will change it into a bright blue, yellow, drab, or glossy black. About 40% of the slag is thus directly available. The remaining 60% is collected in the settling chamber, ground to a fineness of about 225 mesh, and used for producing durable shades of dark red for railway and other purposes. The chemical reactions of the process were fully described by Mr. Sahlin, who wound up his paper by stating:—

"The slag paints are remarkable for their durability, body, gloss, and covering capacity, and for the stubbornness with which they resist all chemical reaction. They are cheap in price and uniform in fineness as in composition. The raw material is available in great abundance and at a nominal cost; and, as their superiority and the simple methods of preparing them become better understood, there is no reason to doubt that they might be universally used, and might form a most valuable by-product of the iron industry."

Official Memoranda.

(From the Board of Trade Journal.)

NEW CUSTOM TARIFF OF MEXICO.

(*Continued from page 78.*)

NOTE.—Kilog. = 2·204 lbs. avoirdupois. Square metre = 1·196 square yards. Peso = 4s. 2d.

THE following is a selection of some of the articles upon which new rates of import duty are now being levied:—

NOTE.—By "net weight" must be understood the actual weight of the merchandise; by "legal weight" that which includes besides the "net weight" that of the interior bottles, boxes, winders, wrappers, &c., in which the articles are imported, and by "gross weight" the total weight of the packages. When merchandise which pays according to the "legal weight" has no other covering besides the one which forms the outside package, the actual weight of the merchandise will be considered to be its legal weight.

No. in Tariff.	Articles, &c.	Rates of Duty now levied.		
	CHEMICAL AND PHARMACEUTICAL PRODUCTS.			Pesos. Cs.
651	Aniline oil	Kilo.	(gross)	0·07
652	Acetates of aluminium, ammonia, chalk, iron, and lead	,,	(legal)	0·08
653	Arsenical acid		Free.	
654	Carbonic, hydrochloric, sulphuric, and sulphurous acids	Kilo.	(gross)	0·03
655	Acetic, nitric, oxalic, and pyroligneous acids	,,	(legal)	0·05
656	Phenic acid		Free.	
657	Liquid acids not specified	Kilo.	(legal)	0·20
658	Acids in crystals or in powder, not specified	,,	,,	1·08
659	Gum for cloth	,,	,,	0·00
660	Aromatic distilled waters, not spirituous	,,	,,	0·50
661	Natural alkaloids, not specified, and their salts	,,	,,	8·00
662	Alcohol and spirits of wine	,,	(net)	0·70
663	Amylic and metallic alcohol or spirits of wood	,,	(legal)	0·20
664	Alizarine, natural or artificial	,,	(gross)	0·05
665	Antiseptic cotton	,,	(legal)	0·25
666	Ammonia, liquid or solid	,,	(gross)	0·01
667	Anthracene	,,	,,	0·07
668	Sugar of milk	,,	(legal)	0·40
670	Varnishes, white and coloured	,,	,,	0·20
671	Benzene	,,	,,	0·10
676	Carbonates and bicarbonates of potash and of soda	,,	,,	0·03
677	Cyanide of potassium	,,	,,	0·08
679	Colours, in powder, in crystals, or prepared	,,	(gross)	0·08
680	Chloral	,,	(legal)	1·00
681	Chlorate of potash or of soda	,,	,,	0·06
682	Chloroform	,,	,,	1·00
683	Chlorides of chalk, soda, or potash		Free.	
684	Chlorides of gold and of platinum	Kilo.	(legal)	16·00
685	Chloride of zinc and protochloride of tin	,,	(gross)	0·01
686	Cream of tartar	,,	(legal)	0·10
693	Extracts of dyewoods	,,	(gross)	0·05
694	Phosphorus, white or red	,,	(legal)	0·50
695	Phosphorus, and wax of all kinds	,,	,,	1·50
697	Hyposulphite of soda		Free.	
702	Nitrate of silver	Kilo.	(legal)	8·00
707	Permanganate of potash		Free.	
712	Common or table salt	Kilo.	(gross)	0·03
713	Aniline salt	,,	,,	0·07
714	Salts of strontium and barytes	,,	(legal)	0·08

Articles, &c.	Rates of Duty now levied.		
and oxides of all substances not ecified	,,	,,	0 15
ite of potash or of soda		Free.	
ites of soda and of potash	Kilo.	(gross)	0 03
tic soda and potash	,,	,,	0 03
hates of copper, iron, and antimony.		Free.	
hates of soda and of magnesia	Kilo.	(legal)	0·03
hite, bisulphite, and trisulphite of lcium and of soda		Free.	
ho-oleine	Kilo.	(gross)	0 07
hide of carbon	,,	(legal)	0·10
odermic tablets or pastilles of lkaloids	,,	,,	8·00
tartar	,,	(gross)	0·08
ing ink	,,	,,	0·08
on for hides		Free.	
icated wines	Kilo.	(net)	0·25
le	,,	(legal)	1·00
form	,,	,,	1·50

IONS FOR THE CARRIAGE OF PETROLEUM THROUGH THE SUEZ CANAL.

ving provisional regulations for the navigation in the Suez s loaded with petroleum in tanks were signed at Paris by d de Lesseps, acting on behalf of the Suez Canal Company, nuary, and will be applicable from and after the 1st July,

ny ship laden with petroleum oil in bulk shall, on arriving rt of access to the canal, at once make herself known by mizzen one of the signals hereafter described, which shall during the whole of her transit.

any such ship makes any stay in port she will be isolated floating booms.

efore obtaining entrance into the canal the captain shall ration to the following effect :—

hip is specially classed for the carriage of petroleum oil in s + A1. 100 at Lloyd's in London, or in class + (1) 3/3 ureau Veritas.

cargo comprises refined petroleum oil only, of a uniform ample of which taken at the port of loading shall have hing point below 23° Centigrade (73° of Fahrenheit's), this temperature having been ascertained conformably ocess of close test as may be recognised and made use of leum oil trade, as for instance, the Abel test, or any other a not lesser degree of accuracy.

sole means of lighting, excepting the regulation apparatus nsit, and her mast lights are electric incandescent lamps, ier electrical installations are in accordance with the rules Veritas.

hip is provided with pumps intended solely for the loading ng of petroleum oil, and having an effective pumping 00 tons weight of oil per hour at a minimum.

ingle tank in the ship has a cubic capacity greater than easurement (being tons of 2·83 cubic metres or 100 cubic nor can discharge its contents into any adjoining tank aperture or want of continuity whatever of its walls.

ink is placed either in the bows or stern of the ship.

portion of the ship occupied by the tanks is completely om the forward and after parts by double oil-tight bulk- g spaces wholly filled with water.

Any ship laden with petroleum oil in bulk must be con- the whole of her transit through the canal by a tank-tug, with a view to the rapid and immediate lightening of the of grounding.

pany reserve the right of approving beforehand the type ensions of this tug, which shall, moreover, conform to all ns of § 5 of Article 12 of the Regulations for Navigation.

pany have a tank-tug which they will place at the disposal aden with petroleum in bulk passing through the canal ins may ask for it. The charge for hire will be in accord- e provisions of § 3 of Article 12 of the Regulations for elating to convoying by a first-class tug.

During the whole of the transit through the canal the take care that no one on board shall smoke nor have about ny means of obtaining light.

Any ship which, after having carried a cargo of petroleum may require to go through the canal empty of oil, shall not be subject to the provisions of these provisional regulations, but her captain shall make a declaration to the effect that he has carried out all operations of cleansing, cleaning, or others, necessary to avoid the presence of any vapour from petroleum oil in the tanks or in any other part of the ship.

Art. 6. All the provisions of the Regulations for Navigation and any appendix thereto not contrary to the provisions of these provisional regulations remain applicable.

Signals *to be shown by ships carrying petroleum oil in bulk* :—

By day —A red flag above one ball.

By night.—A white light between two red ones.

THE INDUSTRIES OF ORENBOURG.

The following notes on the industries of the Russian district of Orenbourg are extracted from a recent report by the Belgian Consul-General at Moscow :—

On the 1st January, 1890, there were in the province of Orenbourg (not including gold workings) 346 industrial establishments, 200 of which are engaged in working the raw materials of the animal kingdom, 105 the products of the vegetable kingdom, and 41 the mineral kingdom. These different establishments, the value of the production of which reached 4,500,000 roubles, give employment to 17,064 persons.

The mineral riches of this Government are immense, gold, platinum, silver, copper, lead, iron, salt, &c., being met with. In 1889 there were 464 gold mines in activity, which produced over 254 pouds (poud = 36lbs. avoirdupois) of this precious metal. The greater part of these mines are situated in the districts of Troitzk, Orsk, Tcheliabinsk, Verkné, Ouralsk, and Orenbourg.

Sixty-eight verstes distant from Orenbourg are found the largest deposits of rock salt in the Empire. The exploitations situated at Iletz, in the Cossack territory, have been closed by an Orenbourg company. These deposits of salt have been explored for more than three square verstes. The thickness of the bed of salt is not yet determined, by reason of the hardness of the rock, the soundings being abandoned at a depth of 68 sagenes.

The deposits were worked as open mines from 1806 to 1889; since then this method of working has been abandoned, and the extraction made by pits. Two pits are sunk ; the first serves for the extraction of the salt, the second for ventilation and the descent of the workmen. The working lasts the whole of the year.

The number of workmen varies from 250 to 300 ; the wage does not exceed 80 copecks per day. The annual production of the mine is about 1,500,000 pouds. The salt is sold in the Governments of Orenbourg, Samara, and Oufa, where the company has established important depôts.

The metallurgical works of the province of Orenbourg in activity during the year 1889 are only engaged in the production of cast iron and an insignificant quantity of steel. The greater number of these establishments are situated in the district of Verkné Ouralsk, in proximity to the rich deposits of magnetic iron ore of the Bachkirs territory.

The cast iron produced by these works is sold for the greater part at the fair of Nijni-Novgorod. The exports are made in the spring by the tributaries of the Bielaya, by the Kama and the Volga.

Correspondence.

*** *We do not hold ourselves responsible for the opinions expressed by our correspondents.*

ANSWERS TO CORRESPONDENTS.

NATRIUM.—Thanks for your letter and enclosures. See this week's Journal.

P. SON & M.—Your communication duly received, for which we thank you.

H. BROS.—We regret that you do not see your way to doing anything further in the matter as the point has been raised in several quarters.

T.W.—The numbers have been sent you, and we have duly received your letter.

L. C. & Co.—Yes, it has been noticed ; your last will also find a place shortly. We are glad to receive them at any time.

J.C.W.—In gas water chiefly. It has been tried but is not worked extensively at to present.

N.F.—It has been at that figure for some little time now, and is certainly not likely to rise, rather the reverse.

GOLD-LINED VITRIOL RETORTS.

To the Editor of the Chemical Trade Journal.

SIR,—I am sure you will pardon my returning to the question of gold-lined (I purposely do not say "gold-plated") platinum vitriol retorts, as this is really a matter of great importance. On the outset I must deprecate the idea that I wish to pose as counsel for the German Patent Office and for its special system of examination. I know myself of several cases in which German patents have been refused for

what I should have considered true inventions (although nothing can be more unjust than the sometimes heard assertion that the German Patent Office is in this respect more rigorous in the case of foreigners than with Germans); on the other hand many patents which are granted at Berlin, lack novelty in my estimation. But I really do not think that the case of Mr. Heraens's patent is an instance to the point. I must certainly correct a mistake made in my last letter to you, which was written on the spur of the moment and "without book." In the Heraens system, the gold-lining is not produced by rolling together hot sheets of gold and platinum, but in the following, I believe, novel way, already described in my "Treatise on the Manufacture of Sulphuric Acid and Alkali," edition of 1891, vol. 1, p. 728. "An ingot of platinum is brought to a white heat, *exceeding the melting-point of gold*; a quantity of *melted* pure gold, corresponding to the desired thickness of the coat, is poured over it, and the double ingot thus formed is rolled into a sheet." (The italics are not in the original). When proceeding in this way, a real *alloy* of platinum and gold is formed at the face of contact between the two metals, which binds them so closely together that they are inseparable by any changes of temperature. The inner coat of gold, having been in a state of fusion, is perfectly dense and solid, and is thus impervious to the prolonged action of boiling strong sulphuric acid, quite differently to anything understood by "strongly gilding" by any of the well-known processes.

The proof of the pudding is in the eating of it. If platinum stills have ever been "strongly gilt" inside, as mentioned in "Phillips" (I have not his book at my disposal), that process has certainly been found to be useless, and has been given up long ago. On the other hand that kind of gold-lined stills which has been introduced by Mr. Heraens, has met with an amount of success which has really been quite surprising to myself, but which I cannot doubt, as I have before me authentic statements from a number of the largest and best-managed German acid works, giving the details of their experience with Heraens stills, after from six to eight months' continuous work, and after manufacturing thousands of tons of sulphuric acid, partly of the highest concentration (97 per cent. and upwards). The Heraens stills, of which since February, 1891, when they were first introduced, already 15 have been sold, have been hitherto, for the sake of economy, provided only with a gold-lined bottom, or at most with a gold lining reaching as high as the acid. It has been observed in *all* cases, where the stills have been stopped and examined for repairs, that those parts consisting of the Heraens composition were completely unchanged, whilst the platinum, where unprotected by a gold lining, was strongly acted upon, even where it was not in immediate or constant contact with the boiling acid. In consequence of this, the Griesherm Works have now ordered a new still to be made in all parts of the Heraens composition; and I suppose that the others will follow suit when their time comes for new orders. I think this will suffice for showing that the German Patent Office has not been wrong this time.

I am, etc.,

Geo. Lunge.

THE PRICE OF ANTHRACENE.

To the Editor of the Chemical Trade Journal.

Dear Sir,—To those interested in the value of anthracene, the timely letter of "Chemicus" should be of much value, although his arguments seem scarcely conclusive or sufficiently comprehensive to warrant his contention, however much a higher price for anthracene is to be desired. "Chemicus" instances the English imports of alizarine as furthering his views, but the consumption of alizarine is world-wide, and not confined to England; and in order to arrive at the rate of consumption not England alone should be considered, but the world's consumption. It should not be forgotten either, in dealing with the English imports of alizarine, that some of the English makers of alizarine have ceased producing (presumably from the unprofitable character of the manufacture), and this (assuming the consumption to remain the same) should naturally increase the English imports, although not thereby increasing the English consumption. Be that as it may, the Turkey-red dyers and printers in England are not credited with having had prosperous times or an increased trade.

Then, again, with regard to the production of anthracene, it is scarcely sufficient to take the figures of the Gas Light & Coke Co. as representative of the actual progress of production, for the business of gas companies generally throughout the kingdom shows a large and steady increase annually, notwithstanding electricity and other illuminants.

"Chemicus" further ignores the great impetus given to carbonising and coke-oven plants, both here and on the Continent, owing to the high prices (and in some instances, such as pitch) still obtainable for products, and the output from these plants alone represents a very considerable percentage of the total anthracene on the market. If 'Chemicus" could show that the total consumption of alizarine is increasing, and that the total production of anthracene is decreasing there are many capitalists who would be only too ready to corner anthracene, even if tar distillers are too contentious to do so; but the statistics of to-day are not sufficiently conclusive to encourage such an operation. It would seem that tar distillers' profits for the present are more likely to arise (or his losses to be cut) from the reduced value of the raw material than from the increased value of the resulting products.

Yours, &c.,

Brais.

Parliamentary Jottings.

HOUSE OF LORDS.

FOGS IN LONDON.

Viscount Midleton asked the Government, on Friday last week, whether they were prepared to issue a Royal Commission to inquire into the causes of the prevalence of fogs in London, to ascertain how far and by what means they were preventable, and to make such recommendations as, after inquiry, they might deem advisable. The noble Lord said it was estimated that in cold weather 40,000 tons of coal were daily consumed, emitting 480 tons of sulphur into the atmosphere. The result was that fogs in the metropolitan area was yearly increasing, and it was believed that the atmospheric state of London affected the atmosphere to a radius so far as Brighton. The London fogs, consisting of smoke particles, were found to be due to the extent of nineteen twenty-eighths to domestic chimneys. There was, he said, a precedent for issuing a Royal Commission to inquire into the best means of abating a public nuisance. To the question "Is there a remedy for this state of things?" the noble Lord replied that there was not one but several. The anthracite or smokeless coal was one, and the introduction of some chemical apparatus in chimneys which would consume smoke or render it innocuous as it passed up was another. He expressed a hope that the Government would appoint a Royal Commission.

The Marquis of Salisbury said he understood that the London County Council had taken up the question, and were making scientific inquiries as to possible and practical remedies. There was very little to ascertain as to the nature of fog, but its colour and density might be greatly altered and reduced by the universal use of anthracite coal. On the part of the Government, he was loth to consent to issue a Royal Commission, the results of which would be unsatisfactory, but he recommended the noble Lord to move for the appointment of a Committee over which he would sit as chairman.

SMOKE ABATEMENT BILL.

Lords Stratheden and Campbell introduced a Bill for the Abatement of Smoke in the Metropolis, and the Bill was read a first time.

Trade Notes.

A Paint for Chemical Works.—The Standard Paint Co, of New York, are introducing a paint which is intended to be specially suitable for coating articles exposed to acid fumes and destructive gases, as it claims to be proof against the action of both acids and alkalies.

Petroleum Furnaces on the Advance.—The use of liquid petroleum as a fuel is on the increase, especially in America. Another large firm of window glass manufacturers at Pittsburgh has abandoned the use of gas as a fuel, employing Lima oil as a substitute.

Soap from American Corn.—In reference to our short notice in last week's issue stating that an oil had been prepared from American corn, suitable for soap making, etc., we are pleased to notify for the benefit of any interested in the matter that further information may be obtained from Messrs. J. Poynter, Son, and Macdonalds, 72, Great Clyde-street, Glasgow, who are agents for the commodity in this country.

Messrs. Galloways, Limited.—The above-mentioned well-known Manchester firm have received the order for six boilers and four large engines for the Manchester Corporation Electric Light Installation. The boilers will be 30ft. long by 8ft. diameter, of ⅝in. steel plates, for 125lbs. pressure, and will be fitted with mechanical stokers, as well as double sets of steam and feed arrangements. The engines will be vertical, 17 and 34in. cylinders, 3ft. stroke, each to give off 360 brake horse power (or 1,440 in the aggregate), with a piston speed of 500ft. per minute, and will be provided with special arrangement of condenser. The whole plant has to be at work by the end of July. The engineer is Dr. Hopkinson, of Victoria-street, Westminster.

Reports of Companies.

DIVIDENDS.

MESSRS. BROOKE, SIMPSON, AND SPILLER.

The directors of Brooke, Simpson, and Spiller (Limited) recommend dividend of £2. 10s. per cent. on "A" shares for the year ending cember 31 last.

PATENT SHAFT AND AXLETREE.

The directors of the Patent Shaft and Axletree Company (Limited) e declared dividends at the rate of 5 per cent. per annum for the f-year ended December 31 last on both ordinary and preference res.

PRICE'S PATENT CANDLE CO., LIMITED.

The directors of Price's Patent Candle Company (Limited) state that profit for 1891 is about £75,400., to which must be added 0,402. undivided profit from 1890. After deducting the dividend d in September and appropriating £12,500. for depreciation, and 0,000. for extinction of good will, there will remain about £35,100. directors recommend a dividend of 15s. per share, making a dis- ution of £1. 10s. per £16. share for the year. The amount carried ard will be about £7,000.

BRUNNER, MOND, AND COMPANY, LIMITED.

The recent announcement that the profits of this alkali- nufacturing company for the half-year amounted to £242,000., that the directors recommend a dividend at the rate of 50 per cent. annum, with £50,000. carried to the reserve, and £36,000. carried ard, shows how rapid its prosperous progress continues to be. authorised capital of the company is £1,500,000., in shares of ; but only £700,000. in ordinary shares, and £450,000. in fully 7 per cent. cumulative preference shares have been issued. For first half of 1882, the ordinary dividend was at the rate of 15 per per annum; for the second half of 1882, 25; for three half-years ne, 1884, 35; to December, 1884, 20, the capital having been ased; for the four half-years to December, 1886, 20; to June, ; 22½; for the four half-years to June, 1889, 25; for the two half- s to June, 1890, 30; for the two half-years to June, 1891, 40; to December, 1891, at the rate of 50 per cent. per annum, while reserve fund, which was £250,000. in June, 1891, is now raised 300,000. This is truly a record of which the directors and staff well be proud.

THE SALT UNION, LTD.

issuing their balance sheet for the last half-year, the directors of Salt Union state that the amount standing to the credit of the profit loss account for the sale of salt, fuel, and brine was £354,185. his has to be added the sum of £81,614., representing the profits ed from carriage and other sources, making the total amount 5,800. After deducting the cost of maintenance of plant, dis- tors' commission, agency and other charges set forth in the profit loss account, the profits from all sources amount to £243,911., to ch should be added the amount brought forward, £2,502.— 6,413. From this sum must be deducted the debenture interest on July 1, 1891, and January 1, 1892, £45,000.; and the interim dends to June 30 last, at the rate of 7% per annum on the preference es and 5% per annum on the ordinary shares, £85,000., leaving 6,413. Your directors recommend that dividends for the half-year ed December 31 last be paid at the rate of 7% per annum on the ference shares, which will require £35,000., and at the rate of 5% annum on the ordinary shares, which will absorb £50,000.; that e be placed to reserve £27,500., and that there be carried forward 913.—£116,413.

Market Reports.

TAR AND AMMONIA PRODUCTS.

Benzol is reported to be better, but we have heard of no actual siness. Anthracene remains unchanged. Pitch retains its firmness, le other tar products are unaltered.

The sulphate of ammonia market continues extremely dull, the and emanating almost entirely from dealers. There is consequently ntinual resale of parcels, evidently bought in anticipation of an y demand, and low prices have been accepted for these in most ances. At Hull and Leith business is reported at £10. 7s. 6d., while Liverpool £10. 5s. is the order of the day. A slight advance is ainable for March delivery. Beckton price is £10. 5s., while the e of outside London makes may fairly be stated as £10 7s. 6d.

MISCELLANEOUS CHEMICAL MARKET.

There are no changes of consequence to report in the market for alkalies. The course of prices is nowadays a very even one. The demand, however, on the whole, is rather quieter for soda ash in various grades of quality. Ammonia ash 58% is still ruling at 1 1/16d. per degree. Leblanc ash 48/58%, 1 5/16d to 1 3/8d., f.o b. Liverpool and Tyne. Bleaching powder is in a firm position at £7. 10s. f.o.r. makers' works, with the reduction of 5s. per ton for contracts over the year being still available. Caustic soda is in somewhat less demand for the home trade, but prices remain steady, the following being current quotations, viz.: 77% f.o b. Tyne, £11. 5s.; f.o.b. Liverpool, 74% £11. 5s.; 70% £10. 5s.; 60% £9. 2s. 6d; cream 60% £8. 15s. —all for 10 ton lots and upwards. Soda crystals remain steady in price. Chlorate of potash very scarce for early delivery, with considerable inquiry, and business done at 5¾d. per lb. Chlorate of soda still steady at 7d. to 7¼d. Sulphate of copper dull at £14s 10s. per ton. Acetates of lime are again rather weaker on the spot, some reductions having been made to induce purchasers. Other acetates generally have a lower tendency. Lead salts quiet, but without further alteration in price meantime. Potash, caustic, and carbonate are slightly easier, but without any pressure of stock. Oxalic acid in small demand, and ruling at 3d per lb. Yellow prussiate of potash rather dearer at 10½d. to 10¾d. Sulphocyanides quiet. Bichromates, soda and potash at 2¾d and 3¾d respectively, with limited demand. General demand for chemicals is still reported unsatisfactory from all quarters.

REPORT ON MANURE MATERIAL.

The market throughout the week has been very slow, at still declining prices for both phosphatic and nitrogenous material. Buyers having bought freely some months back, at what seemed then low prices, are unable to take advantage of present lower values, and anything coming forward unsold is difficult to dispose of.

There is no new feature in mineral phosphates to notice. There are sellers at lowest points touched, and it seems likely that still lower prices will have to be accepted to induce further business, at any rate, until manufacturers get their stores relieved of their stocks of manures. So far orders for manures for home consumption seem to be few and small, but shipments abroad have been on a considerable scale.

River Plate cargoes of bones are difficult to sell; £4. to £4 2s. 6d., according to size and description, nearest value for cargoes afloat, and £4. 5s. would probably now do for summer shipment. East India crushed bones, arrived, have been sold at £4. and £3. 17s. 6d., for inferior quality, ex quay Liverpool, and Kurrachees, near at hand, could probably be bought at £4. 5s.; sales of East Indian bone meal have been made *for shipment* at £4. 5s., but for a good parcel of Bombay arrived, £4. 7s 6d. paid, £4. 5s. to £4 7s. 6d. nearest closing value. Nitrate of soda is very quiet in all positions. Spot is worth 9s. 5¼d. to 9s. 6d. per cwt, due cargoes 9s 4½d to 9s. 5¼d., according to size and test, and December shipments about 9s 6d per cwt.

Nothing doing in dried blood. For fish guano, 8s 9d per unit of ammonia and 9d phosphates asked, in bulk in store Birkenhead, nett cash, but less would have to be taken to induce important business. Kainit is in demand, but in the absence of stocks price must be considered as nominally 42s 6d. to 45s. per ton, in bags, free to rails. Superphosphates unchanged, notwithstanding fall in prices of mineral phosphates, and price of 26% is still 45s. in bulk, free rails at works.

THE LIVERPOOL OIL AND COLOUR MARKET.

LIVERPOOL, WEDNESDAY.

OILS.—Palm oil: the dull tone of last week has given place to an improvement in prices, and an increased enquiry, Lagos having been steady all the week at £20. 15s. To-day's prices are: Lagos, £21 5s. transit; Benin, £20. 10s at quay; Olive continues steady, but is quiet, with Neapolitan and Candia at £37. 10s. to £38., Messina and Corfu at £36. 10s. to £37. per tun. Linseed is steady, with a fair demand at 19s. 6d. to 20s. 6d. per cwt., in export casks. Rape: Refined Stettin is still quoted at 32s. 6d per cwt. Cotton seed has again had a tendency to weaken, Liverpool refined having stood at 18s 3d. all the week through; American remains unchanged. To-day the demand is better, and Liverpool refined has recovered, being quoted 18s 6d. American very steady at 19s. 6d. per cwt. In Castor oil there is more disposition to buy, and sales of good second Calcutta

have been made at 2 9/16 per lb. First pressure French is quiet and slightly weaker, offering at 2¾d. per lb. Tallow remains stationary, the dull tone still prevailing. The demand is very small, and present quotations are barely maintained with Norths at 24s. to 25s. 6d., Souths 27s. 6d. to 28s. Resin is unchanged and remains steady, prices being a shade in favour of buyers on spot, but firm for forward delivery. Spirits of Turpentine: the improvement of last week has continued, and prices have gradually risen till to-day 26s. 3d. per cwt. is lowest price, with a good demand at that figure. Petroleum sells at recent values; American 5½d. to 6⅜d., according to quality, Russian refined 4⅝d. per gallon.

COLOURS unaltered. Ochres: Oxfordshire, common, £10. medium, £12., best, £15.; Derbyshire, common, 40s., medium, 50s., best, 60s. Welsh, best, 70s., seconds, 50s., and common, 18s.; Irish, Devonshire, 40s. to 45s.; French, J.C., 55s. to 60s.; M.C., 65s. to 67s. 6d. Umber: Turkish quiet. Devonshire, 50s. to 55s. White lead, red lead, and oxide of zinc unchanged. Venetian red, £6. 10s. to £10. Cobalt: Prepared oxide, 10s. 6d.; black, 9s. 9d.; blue, 6s. 6d. Zaffres: No. 1, 3s. 6d.; No. 2, 2s. 6d. Oxide of iron: common, £6.; medium, £10.; finest, £20.

THE METAL MARKETS.

LONDON, WEDNESDAY.—Pig iron dull; Scotch warrants closed at 43s. cash. Middlesbrough 35s. 6d. cash, and Hematite 45s. 6d. cash. Copper, quiet. Chili bars, G.O B.'s and G.M B.'s closed at £43. 17s. 6d. cash, and £44. 8s. 9d. to £44. 16s. 3d. three months. Tin easier; Straits closed at £89. 15s. to £90. 5s. cash, and £89. 15s. to £90. 10s. three months. Australian, £89. 17s. 6d. cash; English ingots, £93. to £93. 10s. Lead steady: Spanish, £10. 12s. 6d.; English, £10. 15s. Silesian spelter, ordinary, £21. 5s. Quicksilver: First hands, £7.; Second hands, £6. 19s. Copper shares: Cape 1 7/16 to 1 9/16; Copiapo 2⅛ to 2¼; Libiola 2¾ to 3; Mason and Barry 4 13/16 to 4 15/16; Rio Tinto 16¾ to 16⅞; Tharsis 5 7/16 to 5 9/16; Namaqua 1 to 1¼; Panulcillo 9/16 to 11/16.

THE LIVERPOOL MINERAL MARKET.

Market continues firm, without alteration in prices. Manganese: Arrivals this week are small, prices firmer. Borate, 6¼d. per lb.; sulphate, £21. 10s.; oxalate, 1s. 6d. per lb.; chloride, £15.; carbonate, £12. 10s., steady. Magnesite: Raw lump quiet. Raw ground, £6. 10s., and calcined, £12. 10s. Bauxite (Irish Hill brand) in brisk demand at full prices; lump, 20s.; seconds, 16s.; and thirds, 12s. French chalk: Arrivals this week small; prices, however, continue firm, especially for G.G.B. "Angel White" brand; silvery, 90s. to 92s. 6d.; prime quality, 90s. to 95s.; superfine, 105s. Barytes:—Carbonate: Prime lump continues scarce on account of the weather preventing production, being quoted at 90s. to 95s.; nuts, 70s. to 80s.; whilst finest white sulphate is steady. "Angel White," No. 1, 70s.; No. 2, 60s. to 65s.; No. 3, 45s. Pumicestone steady. Iron ore steady: Bilbao prices still advancing on account of the strike; Irish and Cumberland unchanged; Santander and manganiferous, more doing. Emerystone: Best brands in demand at good prices. No. 1 lump, £5. 10s. to £6.; smalls £5. to £5. 10s. Fullers' earth quiet; best lump, 55s.; fine impalpable ground, £7.; "Emerald" ground, 80s. Scheelite, wolfram, tungstate of soda, and tungsten metal in fair demand, prices firm. Chrome ore of high percentages inquired for, both for spot and forward delivery at full figures. Antimony ore and metal have been firmer. Asbestos very firm. Potters' lead ore of best quality quiet; smalls, £12. 10s. to £13. 15s.; selected lump, £14. 10s. to £15. 10s. Calamine little doing. Strontia sulphate (celestine) continues very quiet. Limespar unchanged, especially for English manufactured, old G.G.B. brand in demand at 50s. (ground). Felspar unchanged. Fluorspar: Best quality scarce. Ferro manganese firmer, 75%, £12.; 85%, £13. 15s. Plumbago brisk. Spanish, £5.; best Ceylon lump at last quotations; Italian and Bohemian, £4. to £12. per ton. "Founders," £5. to £6.; Blackwell's "Mineraline," £10. French sand, 20s. to 22s. 6d. Ground mica, £45. to £50. China clay steady; common, 18s. 6d.; good medium, 22s. 6d. to 25s.; best, 30s. to 35s. (at Runcorn). Bog ore (oxide of iron) steady; finest quality, 22s. to 23s.

TYNE CHEMICAL REPORT.

TUESDAY.

The chemical trade continues steady, with a fair demand for bleach, caustic, and crystals. Recovered sulphur scarce. Bleaching powder, softs, £7. 10s. per ton, hards, £7. 15s. per ton; caustic soda, 77% £11. 10s. per ton, 70% £10. 5s. per ton; recovered sulphur, in 2 cwt. bags, £6. 10s. per ton; soda ash, 48% £5. 8s. 9d. per ton £5. 17s. 9d. per ton, 56% £6. 6s. 9d. per ton; alkali, 36% £4. 18 per ton; white alkali, 48% £6. 10s. per ton, 50% £6. 15 per ton, 52% £7. per ton; hyposulphite of soda, £7. per ton i cwt. casks, £7. 15s. per ton in 1 cwt. kegs in 10 ton lots; silic soda, 75° Tw. £2. 13s. 6d. per ton, 100° Tw. £3. 13s. per 140° Tw. £4. 2s. 6d. per ton; soda crystals, in casks, £2. 17 per ton gross weight, in 2 cwt. bags £2. 17s. 6d. per ton weight, chlorate of potash, 5⅜d. per lb. less 6%; pearl hard £3. 10s. per ton nett; pure white sulphate of alumina, £4. 10 ton; blanc fixe, £7. 10s. per ton; chloride of barium, £7. 10 ton; nitrate of baryta crystals, £17. per ton; nitrate of baryta cr ground, £17. 10s. per ton; sulphide of barium, £7. per ton; carl of alumina, £28. 10s. per ton; aluminate of soda, £33. 10s. per hydrate of barium, £11. per ton.

Salt quiet, at 9s. per ton nett f.o.b. Tees.

Coals: Prices weaker. We are now at about the dullest perio the coal trade in the year; the home consumption falling off and ments being at a low ebb. Best Northumbrian steam, 9s. 9d. per gas coals dull, at 8s. 6d. per ton; bunker coals, 8s. to 11s. accord quality. Coke steady, at 16s. per ton f.o.b.

Durham Miners' Wages: Matters are at a dead-lock and it is g feared that a general strike will ensue. There can be very little that the present and future prospects of the trade render it impera necessary, that, a considerable reduction in wages should take pl

It is stated, that the men will have another opportunity of consi their position.

WEST OF SCOTLAND CHEMICALS.

GLASGOW, TUESD

Sulphate of ammonia, of which 529 tons were shipped out of Le week, has distinctly lost again, and dealers concur in describi market as in a thoroughly feeble condition. The spot price to- £10. 7s. 6d., with buyers on the outlook for a lower quotation; has been some whisper of one lot having been done at £10. 5 things are generally held as not being quite so bad as that yet, a vague report is not believed. There is no mention anywhere jus of any buying on the forward basis.

While without any conspicuous change of quotation on the p makers the market for general chemicals is yet very quiet, and middle hands still slightly shade the Union fixtures, though the p is not at all general. Sulphate of copper, steady at £15. for months past, has dropped five shillings, this forming about th definite change for the week.

In the mineral oil (paraffin) section, the falling off in the dema supplies of burning is continued, and both scale and wax are less quest from the home producers, the latter owing no doubt to the imports of the American make. Lubricants are the steadiest. is no change of value in the section.

Chief prices current are:—Soda crystals, £2. 17s. 6d., nett alum in lump, £5. 10s., nett Glasgow; soda ash, 1⅜d., less Tyne; caustic soda, white, 74°, £11. 5s., 70/72°, £10. 5s., 6 £9. 2s. 6d., and cream 60/62°, £8. 17s. 6d., all nett Liverpool; bonate of soda, 5 cwt. casks, £6. 15s., and 1 cwt. casks, £7. nett refined alkali, 1⅝d., less 2½% Tyne; bleaching powder, £7. nett Tyne; saltcake, 37s. 6d.; borax, English refined, £29. 10 boracic acid, £37. 10s., nett Glasgow; bichromate of p 3¾d., less 10% for Scotch and English deliveries (for 3½d., less 10% f.o.b. Glasgow); bichromate of soda, less 10% for Scotch and English deliveries (for export 2½d., le f.o.b. Glasgow); chlorate of potash, 5¾d., less 5% any nitrate of soda, 9s. 6d.; sulphate of ammonia, £10. 7s. 6d. f.o.b. salammoniac, first and second white, £33. and £35., 5% l port; sulphate of copper, £14. 15s. less 5% Liverpool; paraffi (hard), 2 15/16d., and soft 2 1/16d. to 3d. per lb.; paraffin wax, 120° refined, 3 5/16d. to 4d.; paraffin spirit (naphtha), 7d. a gallon; oil (burning) 5d., 5¼d. and 5½d. according to kind; at wor Scotch buyers (English sales about 1d. lower); ditto (lubri 865°, £4. to £4. 5s., 885°, £5. 5s. to £7., and 890/895°, £6. Week's imports of raw sugar at Greenock were 5,713 bags.

New Companies.

ANGLO-GERMAN SALT SYNDICATE, LIMITED.—This company was regi the 10th inst., with a capital of £50,000, in £1. shares, to adopt and c effect an agreement dated 6th February, 1892, between Gustavus, Baron de of the one part and C. O. Greenwell (for the company) of the other part, fo to the company of the mining rights and property in rock salt, salts of sodi potassium, and brine springs, situate in or under certain lands, situated in S near Celle, Germany, and to exercise the said rights. The subscribers are

	Shares.
and Sele, Sunbury House, Reading	1
Illoughby, J.P., Stettrington House, York	1
Meredyth, 20, Eaton-terrace	1
G. B. von Wahlstatt, 22, Cleveden-place, Eaton-square, S.W.	1
d J. Evans, 20, Bolton-street, Mayfair, W.	1
Weldon, 159, Victoria-street, S. W	1
arringer, 88, Bishopsgate-street, Within, E.C., engineer	1

HAN PATENTS CO., LIMITED.—This company was registered on the 6th with a capital of £5,000., in £1. shares, to acquire and carry on the business cturers and patentees of churns, butter presses, and other dairy machinery, at Redruth by Mr. R. Matthews.

RY DRY PRESS BRICK MACHINE SYNDICATE, LIMITED.—This company ered on the 5th inst., with a capital of £15,000., in £5. shares, to enter reement referred to in clause 3 of the articles, for the purpose of acquiring ventions, and to carry on the business of brick, tile, and pipe makers, iron- mechanical and electrical engineers, etc. The subscribers are :—

	Shares.
Bridges, 4, Mincing-lane, E.C., merchant	1
Bastard, 20, Abchurch-lane, E.C., solicitor	1
W. Mills, 1, East India-avenue, and Lloyds, E.C., underwriter	1
Harris, 3, East India-avenue, E C , merchant	1
Campbell, 39, Lombard-street, E.C., merchant	1
B. Vaughan, White Hall, Madley, merchant	1
Nichols, Thames Pottery, Brick and Tile Works, Southend, Essex	1

CHEMICAL CO., LIMITED.—This company was registered on the 3rd inst., ital of £7,800., in £10. shares (of which 30 are founders'), to acquire and he business of chemical manufacturers carried on by Messrs. E. Bell, E. M. d F. J. R. Carulla, under the style of the Sharon Chemical Company, at ester, Derby. The subscribers are :—

	Shares.
ll, Hillhead, Rothesay, N.B.	1
K. Bell, Hillhead, Rothesay, N.B.	1
Scott, Derwent, Bothwell, near Glasgow, cashier	1
R. Carulla, 84, Argyll-terrace, Derby	1
Carulla, 84, Argyll-terrace, Derby	1
Glover, 21, North-street, Derby	1
E. M. Glover, 21, North-street, Derby	1

The Patent List.

list is compiled from Official sources in the Manchester Technical tory, under the immediate supervision of George E. Davis and R. Davis, who report professionally upon the value of Chemical

APPLICATIONS FOR LETTERS PATENT.

ting Current Electromotors. R. Kennedy. 1,876. February 1.
ements in Obtaining Pigments. D. Swan. 1,882. February 1.
rments in Cupolas or Furnaces for Melting Iron. T. C. Fawcett, T. C. Fawcett, junr., and G. Dyson. 1,901. February 1.
ing Tin from Refuse Slags. W. Muir. 1,907. February 1.
ry Voltaic Batteries. W. J. S. Barber-Starkey. 1,927. February 1.
onomisers. H. Wilson. 1,936. February 1.
ed Method for Melting Glass. G. Sowerby. 1,943. February 1.
Combination of Eucalyptus and its Products. H. Boisselier. 1,946. 2.
Heat and Fuel Economisers. J. Isherwood. 1,960. February 2.
Marking Glass with Acids. W. Leuder. 1,974. February 2.
Improvement in the Manufacture of Iron. D. Dyrenforth. 1,984. Feb. 2.
Heating Apparatus Applicable to Ammoniacal and Other Liquors. J. Wright. 1,991. February 2.
Pumps for Compressing Air and Gases. G. E. Bellis and A. Morcom. 1,992. February 2.
Improved Brick Moulding Machine. W. Ormrod. 2,000. February 2.
Zinc Rods for Electric Batteries. G. Turner. 2,017. February 2.
Improvements in Thermometers. S. G. Denton. 2,023. February 2.
Improvements in Hydrocarbon Burning Apparatus. W. H. Luther and E. M. Bayley. 2,059. February 3.
Improvements in the Manufacture of Illuminating Gas. W. H. Wilson. 2,073. February 3.
Smoke Prevention. E. S. Greaves. 2,086. February 3.
Heating and Welding by Electricity. H. Howard. 2,106.
Improvements in Assay or Chemical Balances. C. F. Betting. 2,117. Feb. 3.
The Production of Benzol and its Homologues from Resins and Other Hybrocarbons. H. Saxl. 2,129. February 3.
Paper Making Machines. J. Sumner. 2,158. February 4.
Producing Carbon Dioxide and Lime from Causticising Refuse and Other Carbonates. C. H. Cribb. 2,165. February 4.
Apparatus for Treating China Grass. G. E. Donisthorpe and T. Burrows. 2,168. February 4.
Improved Thermometer. G. H. S. O. Moller. 2,170. February 4.
Extraction and Treatment of Metals. F. Lebedeff. 2,193. February 4.
Obtaining a New Compound from Amidoguanidine. J. Y. Johnson. 2,194. February 4.
Improved Manufacture of Varnish. R. I. Clarke. 2,201. February 4.
Improvements Relating to the Burning of Liquid Hydrocarbons. W. E. Smith. 2,204. February 4.
Refrigerating Apparatus. J. Chalmers and J. W. Phillips. 2,210. February 5.
Casting and Tempering Pure Copper. T. D. Bottome. 2,214. February 5.
Manufacture of Aluminium Alloys. N. Lebedeff. 2,241. February 5.
Protective Paints. C. H. Bigland. 2,253. February 5.
Burning Bricks and Cement and Manufacturing Domestic Fuel. T. White. 2,259. February 5.
Lead Extraction Apparatus. B. Rosing and the firm of M. Feerster. 2,261. February 5.
Improvements in Oil Press Cages. A. Estrayer. 2,264. February 5.
Smoke Consuming Apparatus. G. J. J. Legrand and L. E. Chagniat. 2,284. February 5.
Improvements in the Manufacture of Iron. J. M. While. 2,209, Feb. 6.
Improvements in Electrolytic Bleaching. O. Imray. 2,329. February 6.

Gazette Notices.

PARTNERSHIPS DISSOLVED.

E. BOOTH AND E. E. WOOD, under the style of the Flora Wax Vesta Co., James-street, Deptford, match manufacturers.
H. STAPLES, J. STAPLES, W. STAPLES, AND J. BOYLAND, under the style of Staples Bros. & Co., Brigg, sheep dip and powder manufacturers; as far as regards W. Staples, J. Boyland, and J. Staples.
DICHAM AND CO., Appley Bridge, Wigan, ink makers.

BANKRUPTCY ACTS, 1883 AND 1890.

Receiving Orders.

HORNBY, GEOFFREY EDWARD, Hurtspierpoint, Sussex, and late trading in partnership at Lewes, as Hornby, Unwin and Co., varnish merchants, gentleman.
WOODBURN, JAMES, Wetherby, lime burner and stone merchant.

Adjudications.

WOODBURN, JAMES, Wetherby, lime burner and stone merchant.
AUSTIN, H. V. (lately trading as J. Austin and Co.), Woodlands, Ilkley, drysalter.

IMPORTS OF CHEMICAL PRODUCTS

AT

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

k ending February 6th.

Acid—		
d,	30 pks.	H. Wallace & Co.
	150	A. & M. Zimmermann
	250	Beresford & Co.
,	402 c.	P. Hecker & Co.
m,	112	Arnati & Harrison
	100	"
m	8	T. H. Lee
,	300	Arnati & Harrison
Barytes—		
Belgium,	23 cks.	Colthurst & Harding
"	66	A. Zumbeck & Co.
Holland,	22	W. Harrison & Co.
Belgium,	20	P. Jantzen
"	23	S. Ward & Co.
"	20	W. Harrison & Co.
Barium Chloride—		
Holland,	4 pks.	A. J. Luke & Co.
Brimstone—		
Italy,	50 t.	Soundy & Son
"	200	W. C. Bacon & Co.
"	16	Union L. Co., Ld
"	100	G. Ward & Sons
Bromine—		
Germany,	30 pks.	A. & M. Zimmermann
Caoutchouc—		
Zanzibar,	21 c.	Wrightson & Son
Singapore,	100	L. & I. D. Jt. Co.
Zanzibar,	6	Price, Bousted, & Co.
Germany,	3	Wallace Bros.
"	7	Clarke & Smith
E. I.,	160	L. & I. D. Jt. Co.
Inhambane,	4	S. Figgis & Co.
"	94	L. & I. D. Jt. Co.
U. S.,	54	Prop. Bull Wf.
Madagascar,	7	Clarke & Smith
U. S.,	26	Stiebel Bros.
Mozambique,	19	Prop. Bull Wf.
Carbolineum—		
Holland,	44 pks.	J. Owen
Caustic Potash—		
France,	55 c.	J. A. Reid
Chemicals *(otherwise undescribed)*		
Germany,	68 pks.	T. H. Lee
"	62	A. & M. Zimmermann
Belgium,	17	T. H. Lee
Germany,	10	Craven & Co.
Belgium,	£12	Magee, Taylor & Co.
Germany,	4 pks.	T. & H. Smith & Co.
Holland,	£5	R. Baelez & Co.
Germany,	£10 70 pks.	L. & I. D. Jt. Co
Copperas—		
Germany,	32 pks.	W. Harrison & Co.
Cream of Tartar—		
Holland,	19 pks.	B. & F. Wf. Co., Ld.
France,	5	J. Puddy & Co.

Holland, 38 Middleton & Co.
Spain, 7 W. C. Bacon & Co.
France, 10 B. & F. Wf. Co., Ld.
" 23 W. C. Bacon & Co.

Dyestuffs—

Argols
France, 72 pks. Ross & Deering

Cutch
Rangoon, 2,000 pks. Ross & Deering
" 500 Perkins & Homer
" 200 Elkan & Co.
" 1,000 Perkins & Homer
" 1,000 H. J. Perlbach & Co.
" 3,979 H. A. Litchfield & Co.
" 2,136 Arracan & Co.

Extracts
France, 450 pks. L. J. Levinstein
U. S., 50 W. Burton & Son
France, 50 Prop. Chmbln's Wf.

Gambier
Singapore, 415 pks. J. Swire & Sons
" 252 Beresford & Co.
Penang, 488 J. H. & G. Scovell
" 217 Anderson, Weber & Smith
Singapore, 163 Evans & Co.
" 856 E. Boustead & Co.
" 620 R. & J. Henderson
" 2,193 L. & I. D. Jt. Co.
" 339 Elkan & Co.
" 436 Brinkmann & Co.
" 360 Baxter & Hoare
" 450 J. H. & G. Scovell
" 85 H. Lambert

Indigo
E. I., 14 chts. Phillipps & Graves
" 75 Hicks, Nash & Co.
" 10 New Oriental Bank
" 12 Dipnall & Co.
" 3 pks. H. Davies
" 259 F. Huth & Co.
" 115 F. W. Heilger & Co.
" 74 Ralli Bros.
" 40 Benecke, Souchay & Co.
" 43 F. Huth & Co.
" 318 Ross & Deering
" 30 G. N. Rly. Co.
" 3 Anderson Bros.
" 11 E. Bower & Co.
" 15 F Stahlschmidt & Co.
" 246 G. Ward & Sons
" 10 Wrightson & Son
" 163 Stansbury & Co.
" 160 Patry & Pasteur
" 301 Elkan & Co.
" 38 H. Johnson & Sons
" 5 Ripley, Roberts & Co.
" 676 L. & I. D. Jt. Co.
" 112 T. Barlow & Bro.
" 10 Parsons & Keith
" 93 F. W. Heilgers & Co.
" 32 Williams, Torrey, & Co.

Logwood
Belize, 189 t. A. Everingham & Co.
St. Vincent, 12 S. Dobree & Sons

Saffron
Spain, 1 pk. Major & Field

Sumac
Italy, 50 H. Johnson & Son
" 300 J. Kitchen, Ld.
" 400 E. & E. Arbib

Tanners' Bark
Belgium, 45 t. J. J. Greenstreet
Adelaide, 50 D. & J. Fowler
" 11 Devitt & Hett
" 31 Anning & Cobb
Melbourne, 30 Fisher, King & Co.
" 11 A. & W. Nesbitt
" 45 Beresford & Co.
Hobart, 10 Leach & Co.
Belgium, 30 Oastler, Palmer, & Co.
Melbourne, 106 Baxter & Hoare

Turmeric
China, 30 pks. P. & O. Co.

Valonia
A. Turkey, 80 t. J. Graves
" 140 A. & W. Nesbitt
" 70 Mavro, Valièri & Co.

Glucose—
France, 300 pks. 600 c. J. Barber & Co.
U. S., 2,000 4,000 J. Forsey
" 100 560 Fowler Bros. & Co.
" 250 250 L. & I. D. Jt. Co.
" 750 750 J. Barber & Co.
" 10 50 Beck & Pollitzer
" 315 1,680 L. Sutro & Co.
" 50 281 J. Keiller & Sons
" 200 1,200 Union Lighterage Co.
" 250 250 Anderson, Weber & Co.
" 250 250 C. F. Webster & Co.
" 250 250 L. Norman & Co.
" 250 250 F. J. Ohlmann & Co.
" 109 550 T. M. Duche & Son
Germany, 5 32 J. Knill & Co.
Holland, 100 100 C. A. Farmer
France, 200 200 Barrett, Tagant & Co.
U. S., 200 1,100 Prop. Chmblns Co.
" 300 1,013 R. G. Hall & Co.
" 340 340 Barrett, Tagant & Co.

Magnesia—
Germany, 3 pks. L. & I. D. Jt. Co.

Manure—
Holland, 50 t. D. de Pass & Co.
France, 250 Couper, Millar & Co.
W. I., 310 London Phosphate Co.
Germany, 10 Odam's Chemical Manure Co

Ochre—
France, 50 brls. W. Harrison & Co.
" 28 pks. Brougham Young

Oxalic Acid—
Holland, 21 pks. Beresford & Co.

Painters' Colours—
Germany, 2 cks. Magee, Taylor & Co.
Holland, 6 pks. W. Harrison & Co.
France, 19 Plageollet & Co.
Germany, 18 Phillipps & Graves
France, 5 Bennett S.S. Co., Ld.
Germany, 5 L. & I. D Jt. Co.
" 24 C. S. Lovell
Holland, 4 Wilkinson, Heywood & Co.
France, 500 Magee, Taylor & Co.
Germany, 25 T. H. Lee
Sweden, 10 M. D Co.

Paraffin Wax—
U. S., 50 cs. Page, Son & East
" 551 brls. Prod. Brkers Co.
" 3,259 J. H. Usmar & Co.
" 17 Crosscurth & Luboldt
" 310 H. Hill & Son
Germany, 35 pks. Ross & Deering
U. S., 60 McDougall & Bouthron

Pearl Ashes—
France, 80 c. Petrie Bros.

Phosphate Rock—
Punta Gorda, 2,500 t. Anglo-Contnl. Guano Wks.
Holland, 300 t. Anglo-Contnl. Guano Wks.
Jersey, 1 T. Farmer & Co., Ld.

Pitch—
France, 72 cks. C. B. Leighton
Germany, 90 brls. Fellows, Morton & Co.

Plumbago—
Germany, 20 cs. O Scholey
" 170 Prop. Scott's Wf.
" 123 brls. J. Thredder, Son & Co.
Ceylon, 400 E. Barber & Co.
" 280 Prop. Sun Wf.
" 70 Doulton & Co.
" 349 J. Thredder, Son & Co
Holland, 64 cks. B. Gallaway
Germany, 40 cs. Poth, Hille & Co.

Potashes—
U. S, 178 c. Charles & Fox

Potassium Bicarbonate—
Holland, 11 pks. A. & M. Zimmermann

Potassium Carbonate—
France, 160 c. J. A. Reid

Potassium Sulphate—
France, 20 pks. Carey & Sons

Salammoniac—
Holland, 2 pks. H. Lorenz

Saltpetre—
Germany, 61 cks. J. Hall & Son
E. I., 700 bgs. L. & I. D. Jt. Co.

Sodium Acetate—
France, 81 pks. Barr, Moering & Co.

Sodium Chlorate—
France, 100 pks. A. Hughes

Sodium Hyposulphite—
Holland, 215 pks. Beresford & Co.

Sugar of Lead—
Belgium, 15 pks. Northcott & Sons

Tartaric Acid—
Italy, 40 pks. W. C. Bacon & Co.
Holland, 21 Domeier & Co.
" 39 Middleton & Co.
" 18 B. & F. Wf. Co., Ld.

Ultramarine—
Holland, 20 cks. Hermu, Peron & Co.
" 5 brls. Little & Johnston
" 7 cs. Phillipps & Graves
" 30 "
" 50 G. Steinhoff
Germany, 10 "
Belgium, 13 Leach & Co
" 13 W. Harrison & Co

White Lead—
Holland, 96 cks. F. and W. Farmiloe
" 27 A. & M. Zimmermann
" 28 S. H. Willoughby
Belgium, 25 brls. Leach & Co.
" 29 L. J. Lyon & Co.
Holland, 12 J. A. Drew
" 25 D. Storer & Sons
Germany, 12 H. Lamber[illegible]

Zinc Oxide—
Holland, 200 brls. M. Ashby, Ld.
Germany, 15 cks. Beresford & Co.

LIVERPOOL.

Week ending February 11th.

Acetic Acid—
Rotterdam, 10 bskts.

Acetate of Lime—
New York, 971 bgs.

Barytes—
Antwerp, 400 bgs.
In trantsit, 166 cks.

Benzol—
Rotterdam, 10 css.

Caoutchouc—
Hamburg, 132 cks.

Carbolineum—
Hamburg, 5 cs. 5 cks.

Chemicals (*otherwise undescribed*)
Rouen, 40 cks. Co-op. W'sale Society

Copper Pyrites—
Huelva, 4,450 Matheson & Co.
" 1,405 Tennants & Co.

Cream of Tartar—
Barcelona, 5 cks.
Tarragona, 3 brls.
Bordeaux, 6 cks.

Dyestuffs—

Argols
Bordeaux, 86 cks.

Extracts
Antwerp, 10 brls.

Gambier
Singapore, 6,660 bls.

Madder
Rotterdam, 1 ck.

Myrabolams
Calcutta, 1,000 bgs.

Saffron
Valencia, 1 cs. Inman &
" 1 S.S

Farina—
Antwerp, 20 bgs. J. T. Fle

Glucose—
New York, 950 brls.
Rouen, 10 cks.

Horn Piths—
Hamburg, 15 t.

Manganese Ore—
Gothenburg, 18 t. Dunford &

Nitrate—
Iquique, 9,939 bgs. W. & J. Lo

Oleine—
Bordeaux, 106 cks.

Paraffin Wax—
Baltimore, 100 brls.

Phosphate—
Brunswick, 1,037 t.
Ghent, 600 bgs.

Phosphate Rock—
Pt. Royal, 2,050 t.

Pitch—
Bordeaux, 30 cks.

Potash—
Hamburg, 16 cks.
Rouen, 7

Potassium Carbonate—
Hamburg, 11 cks.

Rosin—
Savannah, 5,000 brls.
Bayonne, 685

Saltpetre—
Calcutta, 1,597 bgs.
Hamburg, 170 cks. 20 bgs.

Soap—
Boston, 3 cs. 1 brl. R. Schl

Soapstone—
Bordeaux, 100 sks. G. G. Blac

Soda Ash—
Rowen, 10 cks. Co-op. W

Sodium Nitrate—
Iquique, 10,920 bgs.

Spirits of Turpentine—
Savannah, 76 brls.

Stearine—
Antwerp, 32 bgs.

Tartar—
Bordeaux, 8 cks.

Tartaric Acid—
Rotterdam, 16 cks.

Ultramarine—
Hamburg, 10 cks. 3 css.

Waste Salt—
Hamburg, 101 bgs.

White Lead
Ghent, 8 cks.

Zinc Ashes—
Antwerp, 9 cks. J. F. Fl

Zinc Oxide—
Antwerp, 50 brls. J. F. Fl
St. Nazaire, 25
Antwerp, 280

Zinc White—
Rotterdam, 150 cks.
" 110 O. & H. M

GLASGOW.

ending February 11th.

—
dam, 90 brls.
s Sulphate—
rp, 20 cks.
ose—
urg, 412 rolls.
of Tartar—
illes, 27 cks.
6 kgs.
uffs *(otherwise undescribed)*
urg, 80 pcs.
, 36,028
uffs—
arine
dam, 179 cks. 2 css.
ch
ta, 67 css.
racts
rp, 11 cks.
York, 10 brls. 100 bxs.
ider
illes, 22 brls.
meric
ta, 300 bgs.
k—
urg, 100 bgs.
se—
York, 200 brls.
m—
, a quantity.
—
5 cks.
illes, 161 brls.
ash—
rk, 4 dms.
ium Prussiate—
urg, 36 cks.
ium Sulphate—
rp, 16 cks.
—
aux, 6 cks.
Emetic—
urg, 4 cks.
ic Acid—
dam, 4 cks.
arine—
rp, 20 css.
Salt—
urg, 20 cks.

White Lead—
Antwerp, 13 cks.
Rotterdam, 77 5 css.
Zinc Oxide—
New York, 50 brls.
Zinc White—
Rotterdam, 105 cks. J. Rankine & Son
Amsterdam, 5 brls.

HULL.

Week ending February 4th.

Acids—
Rotterdam, 1 cs. W. & C. L. Ringrose
Albumen—
Riga, 5 cs. G. [illegible]
Antimony—
Hamburg, 5 chts. Wilson, Sons & Co.
Arsenic—
Hamburg, 2 brls. Wilson, Sons & Co.
Barytes—
Rotterdam, 97 cks. Blundell, Spence & Co.
Caoutchouc—
Hamburg, 15 css. Wilson, Sons & Co.
Chemicals *(otherwise undescribed)*
Flushing, 1 ck. Zeeland S.S. Co.
Bremen, 2 kgs. 4 cs. 40 pkgs. Veltmann & Co.
,, 4 cks. 1 J. Pyefinch & Co.
Dunkirk, 87 pks. Wilson, Sons & Co.
Antwerp, 30 bgs. ,,
Cotton Seed Oil—
New York, 200 brls. Wilson, Sons & Co.
Cream of Tartar—
Rotterdam, 1 ck. G. Lawson & Sons
Dyestuffs—
Alizarine
Rotterdam, 31 brls. Hutchinson & Son
,, 16 cks. 74 pks. W. & C. L. Ringreso
Farina—
Hamburg, 27 hgs.
Harlingen, 50
Manure—
Ghent, a quantity. Wilson, Sons & Co.
Naphtha—
Rotterdam, 2 cks. G. Lawson & Son
Ochre—
Rouen, 13 cks. Rawson & Robinson
,, 38
Phosphate—
Antwerp, 40 t. Wilson, Sons & Co.
Pitch—
Rotterdam, 43 cks. G. Lawson & Son
Plumbago—
Hamburg, 1 ck. Lawson & Sons
Potash—
Rotterdam, 19 cks. G. Lawson & Son
,, 11 W. & C. L. Ringrose
Saltpetre—
Hamburg, 1 ck. Wilson, Sons & Co.
Soap—
Rotterdam, 1 cs. G. Lawson & Son
Tartaric Acid—
Rotterdam, 5 cks. Hutchinson & Son
Ultramarine—
Rotterdam, 8 cks. W. & C. L. Ringrose
,, 4 Todd & Son
Varnish—
New York, 25 brls. Wilson, Sons & Co.
White Lead—
Rotterdam, 10 cks. T. F. Chambers & Co.
,, 10 T. Fewster & Sons
,, 10 Blundell, Spence & Co.
Antwerp, 86 Bailey & Leetham
Zinc Oxide—
Rotterdam, 35 brls. Sissons, Bros. & Co.

TYNE.

Week ending February 6th.

Acetic Acid—
Antwerp, 25 cks. Tyne S.S. Co
Alum Earth—
Hamburg, 17 cks.
Saltpetre—
Hamburg, 10 cks. Tyne S.S. Co.
Saltpetre Salt—
Hamburg, 470 t.
Ultramarine—
Rotterdam, 4 css.
Zinc Ashes—
Christiania, 26 bgs.
Zinc Oxide—
Antwerp, 5 brls.

GOOLE.

Week ending January 27th.

Antimony—
Boulogne, 2 cks.
Dyestuffs *(otherwise undescribed)*
Boulogne, 192 cks. 8 css.
Dyestuffs—
Extracts
Rotterdam, 4 brls.
Farina—
Hamburg, 200 bgs.
Glucose—
Dunkirk, 100 bgs.
Potash—
Dunkirk, 28 dms. 27 cks.

GRIMSBY.

Week ending January 30th.

Chemicals *(otherwise undescribed)*
Hamburg, 37 pks
Dyestuffs *(otherwise undescribed)*
Dieppe, 51 cks.
Zinc Ashes—
Antwerp, 14 cks.

EXPORTS OF CHEMICAL PRODUCTS

OF

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

ending February 10th.

Acid—
ille, 15 c. £11
—
dorf, 120 brls. £96
—
irk, 4 c. £1
Bay, 6 9
iai, 2 t. 5 8
6 18 42
—
hurch, 10 kgs. £9
and, 3 csks. 29
15 t. 86
ers, 1 6
2 13
nous Cake—
ta, 50 t. £165
nia (Liquid)—
chee, 3 pks. £8
ama, 3 c. 12
nium Carbonate—
y, 2 t. £72
bury, 4 c. 8
res, 10 16
Monte Video, 5 cs. 8
Odessa, 3 5 95
Berbice, 5 9
Amorphous Phosphorus—
Hiogo, 13 c. £149
Ammonia Salts—
Yokohama, 1 t. £38
Ammonium Sulphate—
Dunkirk, 30 t. 10 c. £325
Mangalore, 1 3 11
Canaria, 2 23
Demerara, 50 520
Paris, 20 7 240
Cologne, 45 450
Ghent, 54 567
Rotterdam, 81 3 890
Arsenic—
Melbourne, 50 drs. £35
San Francisco, 3 t. 16 c. £49
Barytes Sulphate—
Venice, 8 cks. £32
Borax—
Rotterdam, 7 c. £12
Borax Crystals—
Tangiers, 2 c. £3
Antofagasta, 5 6
Carbolic Acid—
Penang, 21 pks. £18
Rotterdam, 11 css. 49 cks. 175
Paris, 2 t. 6 c. 16
Caustic Potash—
Lyttleton, 2 t. 12 c. £117
Caustic Soda—
Shanghai, 13 c. £17
Dunedin, 5 3
Constantinople, 5 t. 9 36
Brisbane, 3 7
Townsville, 2 4
Fremantle, 2 4 24
Natal, 5 146
Algoa Bay, 1 50
Chemicals *(otherwise undescribed)*
Melbourne, 10 kgs. 25 pks. £152
Bombay, 3 cks. 7 cs. 19
Calcutta, 1 9
Sydney, 30 36
Barbadoes, 1 t. 15 c. 133
E. London, 6 16
Algoa Bay, 9 35
Singapore, 3 pks. 40
Chloride of Lime—
Hong Kong, 5 c. £6
Rockhampton, 100 t. 1,186
Citric Acid—
Natal, 1 cs. £3
Flushing, 1 kg. 8
Hamburg, 2 t. 4 c. 19 pks. 606
Brussels, 10 72
Yokohama, 10 73
Sydney, 2 12
Genoa, 10 pks. 11 cks. 609
Leghorn, 6 48
Vigo, 1 7
Boulogne, 1 7
Auckland, 1 kg. 8
Rotterdam, 7 53
Hamburg, 19 2 t. 5 1 cks. 653
Barcelona, 16 580
B. Ayres, 2 17
Libau, 14 506
Moscow, 1 140
Reval, 10 362
Coal Products—
Anthracene
Dusseldorf, 437 cks. £2,762
Benzol
Rotterdam, 50 cks. 29 pks. 790
Coal Pitch
Alexandria, 530 brls. 195
Coal Tar
Calcutta, 234 cs. 121
Creosote
Danzig, 100 cks. 69
Boulogne, 2 pks. 19
Treport, 30 brls. 95
Creosote Salts
Cologne, 101 t. 157
Naphtha
Treport, 27 cks. 60
Calais, 25 rnlts. 84
Naphthaline
Rotterdam, 15 cks. 21
Dunedin, 9 14
Hamburg, 50 bgs. 27 254
Le Treport 121 123

Pitch
Gothenburg, 3 brls. 30
Cette, 1,232 t. 1,971
Boston, 500 cks. 267
Antwerp, 760 1,355
Spezzia, 257 4,499
Baltimore, 250 131
Odessa, 100 40
Alexandria, 200 84
Havre, 639 1,100
Calcutta, 75 pks. 40
Trinidad, 20 78
Natal, 40 200 drs. 17
Gijon, 160 319
Dunkirk, 1,170 1,906
Melbourne, 25 brls. 19
Tar
Bombay, 9 dms. 20
Natal, 470 50
Toluol
Calais, 50 rults. 182
Rotterdam, 122 cks. 379

Copperas—
Sam, 15 t. 15 c. £37

Copper Sulphate—
Antwerp, 9 t. 19 c. £150
Monte Video, 2 4 33
Genoa, 5 70
Treport, 14 15 226
Dunkirk, 5 18 85
Batoum, 9 19 138
Bordeaux, 12 179
Venice, 6 10 98
Sydney, 5 73
Paris, 60 902
Bordeaux, 52 9 812

Cream of Tartar—
Sydney, 2 t. 8 c. £203
Wellington, 20 kgs. 94

Disinfectants—
Shanghai, 8 cs. £29
Calcutta, 15 drs. 22
Hamburg, 100 cks. 500
Natal, 100 16
Sydney, 12 css. 25 pks. 76

Guano—
Barbadoes, 250 t. £2,500
Jersey, 60 512

Manure—
Dunkirk, 150 t. £1,650
Madeira, 4 10 c. 29
Valencia, 5 50
Treport, 49 17 308
Bordeaux, 82 355
Rouen, 50 410
Havre, 55 240
Ghent, 150 1,650
Gothenburg, 77 19 363
Perros, 100 450
Brisbane, 10 7 234
Bordeaux, 51 18 197
Natal, 1 6 25
Algoa Bay, 15 32
Martinique, 98 10 350
Hamburg, 145 1,595
Jersey, 30 240

Mirbane—
Dunkirk, 40 drs. £70

Muriatic Acid—
Hong Kong, 10 c. £8

Potash—
Shanghai, 2 c. £6
Calcutta, 15 cs. 80
Oporto, 1 t. 4 23

Potash Salts—
Natal, 26 t. £3,430

Potassium Cyanide—
Natal, 7 c. £60

Potassium Muriate—
Mangalore, 1 t. 1 c. £14

Potassium Prussiate—
Natal, 5 c. £24

Saltpetre—
Bahia, 5 t. 10 c. £123
Rio de Janeiro, 3 16 86
Melbourne, 1 5 27
Sydney, 0 130
San Francisco, 2 15 61
Oporto, 9 4 189

Salts of Tartar—
Sydney, 10 c. £10

Sheep Dip—
Natal, 20 cs. £48
San Francisco, 66 350 drs. 996
Cape Town, 100 300
E. London, 95 1,000 254
Algoa Bay, 1,120 drs. 280

Soda—
Shanghai, 1 t. 12 c. £8
Barcelona, 5 2
Sydney, 2 5

Soda Crystals—
Cape Town, 1 t. 2 c. £5
Singapore, 7 1
Wellington, 11 8 40
Aden, 6 1
Townsville, 10 34
Tangiers, 1 4
Barbadoes, 7 1
Trinidad, 8 2

Sodium Bicarbonate—
Auckland, 1 t. £8
Durban, 5 c. 2
Antafagusta, 5 2
Natal, 1 8

Sodium Carbonate—
Townsville, 1 t. £8

Sodium Sulphate—
Ghent, 90 t. £135
Launceston, 10 c. 5

Sulphur—
Algoa Bay, 1 t. 1 c. 100 kgs. £71
E. London, 6 10 77

Sulphur Flowers—
Sydney, 2 t. £17
E. London, 50 kgs. 29

Sulphuric Acid—
E. London, 40 cs. £60
Algoa Bay, 22 43 dms. 79
Madras, 24 20
Natal, 1 t. 12 c. 15
Barbadoes, 4 cs. 21

Sulphate of Lime—
Jersey, 10 c. £15

Sugar of Lead—
Yokohama, 1 t. £30

Tartaric Acid—
Algoa Bay, 3 c. £16
Melbourne, 1 t. 122
Sydney, 2 13 318
Bahia, 3 14

LIVERPOOL.

Week ending February 10th.

Alum—
Havana, 6 t. 9 c. 2 q. £33
Barcelona, 5 74
Cape Town, 2 11

Alum Cake—
Rio de Janeiro, 6 t. 3 c. 2 q. £20

Ammonium Carbonate—
Seville, 10 c. 2 q. £16
Gothenburg, 10 1 17
Genoa, 6 9

Ammonium Chloride—
Philadelphia, 13 t. 9 c. 2 q. £308
New York, 1 19 1 54

Ammonium Nitrate—
Valparaiso, 3 t. 10 c. £298

Ammonium Sulphate—
Venice, 9 t. 19 c. 3 q. £120
Genoa, 20 5 2 225
Montreal, 5 11 2 60
Tonnay Charente, 40 t. 5. c. 480
Valencia, 151 19 1,681
New Orleans, 150 15 1 1,610
Charente, 20 8 245
Cheribon, 51 3 1 568
Barbadoes, 40 15 1 434
Ghent, 75 15 760
Hamburg, 90 416
Alicante, 9 12 3 105
New York, 50 4 2 531
Nantes, 81 2 3 819

Antimony Sulphate—
Boston, 1 t. 2 c. 1 q. £137

Barytes Chlorate—
Hamburg, 10 c. £35

Bleaching Powder—
Ancona, 10 cks.
Baltimore, 491
Boston, 717
Genoa, 83
Leghorn, 7
Messina, 6
New York, 486
Alexandria, 6
Bombay, 10 css.
Calcutta, 103
Malaga, 30 cks.
Montreal, 58

Borax—
Hobson's Bay, 8 c. £12
Calcutta, 12 16
Rangoon, 1 t. 10 2 q. 45
Adelaide, 3 8 1 99
Antwerp, 3 2 1 92
Cardenas, 6 9
Sydney, 2 11 77

Calcium Chloride—
Hong Kong, 4 t. £9
New York, 8 28
Boston, 9 19 c. 20
M. Video, 2 10 6

Caustic Soda—
Adelaide, 88 dms.
Alexandria, 2
Ancona, 45
Bahia, 45
Baltimore, 270 brls.
Batoum, 400 dms.
Boston, 500
Calcutta, 177
Cape Town, 6
Catania, 30
Chicago, 30 bxs. 400
E. London, 18
Fiume, 150
Barcelona, 55 brls. 40 cks.
Bari, 126 dms.
Barranquilla, 30
Beyrout, 10
Bilbao, 127
Corfu, 40
Dunedin, 25
Galatz, 31
Genoa, 60
Madeira, 5
M. Video, 110
Naples, 30
Palermo, 5
Penang, 25
Hamburg, 43
Havana, 110
Lisbon, 60
Malaga, 6 brls. 30
Matanzas, 100 kgs. 22
Messina, 20
Nagasaki, 260
Newcastle, 72
New York, 100 brls. 889
Oporto, 46
Windsor, 60
Amsterdam, 1
Pernambuco, 100
Puerto Cabello, 5 kgs.
Rio Grande do Sul, 90
San Francisco, 289
Santander, 30
Trieste, 30
Valparaiso, 70 kgs. 186
Victoria (B. C.) 10
Yokohama, 50

Calcined Magnesia—
Lisbon, 1 cs. £23

Carbolic Acid—
New York, 1 t. 2 c. 1 q. £45
Hamburg, 8 23
Canada, 12 25

Caustic Potash—
Chicago, 2 t. 3 c. £47

Chemicals *(otherwise undescribed)*
Venice, 10 c. 3 q. £17
Beyrout, 14 2 23
Rotterdam, 17 t. 4 250
Hamburg, 6 10
Mersyne, 1 6 3 43

Copperas—
Constantinople, 3 t. 6 c. £7

Copper Sulphate—
La Rochelle, 9 t. 16 c. £134
Genoa, 27 15 2 q. 398
Leghorn, 6 16 1 102
Naples, 1 6 1 19
Smyrna, 1 20
Ghent, 10 1 140
Antwerp, 8 2 6
Marseilles, 10 2 135
Galatz, 10 9
Barcelona, 45 11 3 £677
Bordeaux, 184 4 2 2,590
Constantinople, 16 2 36

Magnesium Chloride—
Bombay, 15 t. £40

Manure—
Rio de Janeiro, 3 t. 18 c. £40
St. Nazaire, 300 t. 2 3 q. 997
Copenhagen, 2 19 1 12
Genoa, 345 5 2 1,180
Malaga, 38 11 380
Valencia, 300 2,700
Havre, 251 4 2 839
Marseilles, 140 10 860
Nantes, 85 2 2 165
Rochefort, 500 7 1 1,357

Muriate of Lime—
Sydney, 20 t. £45

Nitrate of Lead—
Genoa, 9 c. 1 q. £9

Oxalic Acid—
Barcelona, 8 t. 9 c. 2 q.
Pasages, 2 13 3
Malta, 6
New York, 10 9 2

Pearl Ashes—
Hamburg, 4 c. 1 q.

Phosphate—
Hamburg, 22 t. 4 c. 3 q.

Potashes—
M. Video, 1 t. 2 c. 1 q.
Catania, 3 1

Potassium Carbonate—
Chicago, 4 t.
Rio de Janeiro, 11 c. 1 q.

Potassium Chlorate—
Corunna, 10 c.
Gothenburg, 3 t.
Genoa, 1
Ancona, 1 15
Bari, 1
Hamburg, 10
Antwerp, 2
New York, 20
Rotterdam, 1

Potassium Prussiate—
Genoa, 4 cks.

Salammoniac—
Philadelphia, 4 t. 2 c. 1 q.
Genoa, 1 1
Alexandretta, 1
New York, 10 4 3
Smyrna, 11 1

Salt—
Algoa Bay, 74½ t.
Antwerp, 200
Boston, 80
Calcutta, 3,666
Cameroons, 50
Conakry, 262
Copenhagen, 250
E. London, 26
Gr. Bassa, 5
Hamburg, 213
Landana, 10
Loanga, 13
Manaos, 5
New York, 70
Old Calabar, 196 1 c.
Saltpond, 10
Savannah-la-Mar, 250
Sydney, 275
Valparaiso, 303 4 c.
Akassa, 400
B. Ayres, 3¼
Chicago, 195
Isles de Los, 25
Kingston (Jam.) 5
Lagos, 38
Newport News, 800
Rangoon, 1,000
Trinidad, 17 17 c.
Wilmington, 250

Salt Cake—
Baltimore, 214 t. 6 c.

Saltpetre—
Savanilla, 8 c. 2 q.
Maranham, 5 2
Barnatyba, 1 t. 18 1

Sheep Dip—
Port Natal, 12 c.
Algoa Bay, 2 t.
B. Ayres, 28 11 742 cs.

Soap—
Algoa Bay, 1,175 bxs. 125 cs.
Bombay, 5
Copenhagen, 100
E. London, 54
Gibraltar, 295 18
Las Palmas, 416
Lucca, 100
Malta, 23 21
Montego Bay, 100
New York, 6 cks. 400 54
Pt. Natal, 1,425
Rangoon, 36
St. Thomas (W. I.), 550
Sierra Leone, 200
Surinam, 80
Trinidad, 1,300
Valparaiso, 50
Varna, 1 cs.
Annotte Bay 20
Barbadoes, 200
Boston, 6 cks.
B. Ayres, 60
Calcutta, 4 250 bdls.
Cape Town, 970
Durban, 300
Falmouth, 50

20
25
oupe, 1,200
100
21
on (Jam.), 1,330
hee, 217
ote, 224
s, 10 cs.
s, 1,050
150
elphia, 101
n's (Nfd.), 10
ia, 45
50
al, 954
, 250
ore, 300

Alkali—
te, 70 brls.
na, 100
me, 60
75
40
35

ash—
f, 50 cks. 50 brls.
ork, 104
, 32 10 pps.
elphia, 86 277 tcs. 120 bgs.
a, 70
a (B. C.), 27 cks.
de, 59
a, 13
ore, 998 128
y, 22
, 277 85 480
69 sks 20 dms.
gena (Spain), 12 cks. 20 brls.
a, 16 cks.
e, 30
ork, 272 1,426 tcs.
, 2
rande do Sul, 50
rancisco, 160
y, 8
100

Crystals—
ndria, 34 brls.
a, 50 kgs.
e Video, 30
York, 60 cks.
delphia, 50
o, 107
hn's (N. B.), 42 300 kgs.
taya, 30
ia (B. C.), 20

m Biborate—
es, 100 cs. £150
a, 16 c. 1 q. 25
erp, 25 t. 3 3 756
York, 10 15

m Bicarbonate—
a, 80 kgs. 45 cks.
ndria, 15 brls.
erp, 14
ay, 200
ane, 2 cks.
tta, 500
o, 2 dms.
nhagen, 210 16 cks.
at, 110
hi, 1
ourne, 60
Alegre, 75 cks.
rdam, 20
hn's (N. B.), 300
Francisco, 30
e, 100 20 brls.
ia (B. C.), 60

m Bichromate—
nburg, 19 c. 1 q. £22

m Chlorate—
burg, 2 t. 11 c. £154
rdam, 1 19 119
York, 5 296

m Nitrate—
ria, 1 t. 13 c. £17
o, 10 2 q. 99

m Silicate—
ute, 16 cks.
a, 16
ey, 40
ria (B. C.), 32

r of Lead—
ames, 9 c. 1 q. £16

hur—
ish, 3 t. £24
John's, 4 16 41
ifax, 5 3 2 36

rphosphate—
ers, 66 t. 8 c. 2 q. £174

Muriate—
ilay, 2 t. 16 c. 3 q. £44

GLASGOW.

Week ending February 11th.

Ammonium Sulphate—
Demerara, 98 t. £300
Valencia, 85 2½ c. 300

Benzol—
Rotterdam, 9 dms. £195
Dieppe, 35 pns. 290

Bleaching Powder—
Calcutta, 30 t. 15½ c. £260

Brimstone—
Madras, 5 t. 2½ c. £50

Chemicals *(otherwise undescribed)*
Genoa, 103 t. 9 c. £520

Coal Tar—
Straits, 11½ t. £24

Coal Tar Pitch—
Oporto, 253 t. 14 c. £311
Baltimore, 40 17½ 110
Santander, 202 4 £232. 10s.

Copperas—
Bombay, 18 t. 17 c. £40

Dyestuffs—
Logwood
Oporto, 12 t. £99

Litharge—
Oporto, 2 t. 13 c. £40

Manganese—
Rotterdam, 65 c. £34

Painters' Colours—
Straits, 11 t. 10½ c. £140
Malta, £39. 18s.

Paraffin Wax—
Venice, 41 c. £67

Pitch—
Amsterdam, 256 t. £294
Dieppe, 100 165

Potassium Bichromate—
Rotterdam, 15 cks. £175
Drontheim, 1 7
Venice, 223 t. 41 c. £436

Sulphate of Iron—
Oporto, £25

Sulphuric Acid—
Madras, 21 t. 8½ c. £92

White Lead—
New York, 3 t. 8 c. £51

HULL.

Week ending February 2nd.

Alkali—
Bergen, 2 cks.

Bleaching Powder—
Reval, 73 cks.

Borax—
Hamburg, 2 cks.

Calcium Sulphate—
Rouen, 360 bgs.

Caustic Soda—
Hango, 80 dms.
Konigsberg, 18
Libau, 60

Chemicals *(otherwise undescribed.)*
Amsterdam, 20 cks. 16 pks.
Bergen, 2 cs. 2
Boston, 11 100
Copenhagen, 6 21 css.
Christiania, 331 slabs.
Dunkirk, 2 css.
Hamburg, 40 73
Harlingen, 22
Libau, 3 433
Rotterdam, 60 32 1
Reval, 99
Rouen, 74
Stettin, 10 8

Copper Sulphate—
Bergen, 2 cks.
Danzig, 10

Cottonseed Oil—
Antwerp, 1,123 c.
Bordeaux, 278
Christiansand, 17
Flushing, 910
Hamburg, 2,108
Stettin, 400
Rotterdam, 3,473

Creosote Salts—
Antwerp, 110 bales.

Dyestuffs *(otherwise undescribed)*
Antwerp, 1 ck.
Boston, 7
Dunkirk, 3 80 bgs.
Hamburg, 4
Rotterdam, 3 dms.
Riga, 2 css.
Stettin, 66 brls.

Guano—
Jersey, 40 t.

Linseed Oil—
Copenhagen, 17 c.
Christiania, 69
Christiansand, 7
Hamburg, 198
Jersey, 2

Manure—
Dunkirk, 444 bgs.
Ghent, 300
Hamburg, 227
Rouen, 250

Naphtha—
Copenhagen, 15 cks.

Painters' Colours—
Amsterdam, 1 cs.
Antwerp, 3 157 cks. 4 dms.
Bremen, 1
Boston, 24 2 pks.
Copenhagen, 1 10
Christiania, 44 79
Christiansand, 30
Danzig, 6
Dunkirk, 2 cs. 6
Flushing, 1
Ghent, 2 2
Gothenburg, 1 1 1
Hamburg, 3 5 5
Jersey, 10 10
Libau, 13
Rotterdam, 1 3
Reval, 50
Rouen, 6

Pitch—
Antwerp, 657 t.
Dunkirk, 64

Stearine—
Libau, 156 bgs.

Varnish—
Amsterdam, 10 cks.
Antwerp, 6 css.
Christiania, 1
Dunkirk, 2
Ghent, 2 2 dms.
Gothenburg, 3 1 css.
Hamburg, 1 9
Rotterdam, 3

TYNE.

Week ending February 6th.

Alkali—
Antwerp, 22 c.
New York, 4 334
Ergastiria, 46
Amsterdam, 873
Rotterdam, 120

Alum Cake—
Copenhagen, 209 c.

Alumina Sulphate—
New York, 123 c.

Ammonium Carbonate—
Danzig, 20 c.

Ammonium Sulphate—
Genoa, 400 c.
New York, 498
Venice, 161
Dunkirk, 1,500

Arsenic—
Venice, 303 c.
Gothenburg, 21

Barytes—
Antwerp, 431 c.
Danzig, 35

Barytes Carbonate—
New York, 2,000 c.
Rotterdam, 923

Bleaching Powder—
Bilbao, 215 c.
Antwerp, 794
Genoa, 1,557
Copenhagen, 357
Amsterdam, 1,514
Rotterdam, 298 14 cks.
Odense, 202
Venice, 416
Dunkirk, 200
Christiania, 301

Carbolic Acid—
Odense, 18 c.

Caustic Soda—
Antwerp, 46 c.
Genoa, 1,633
Rotterdam, 58
Amsterdam, 69
Venice, 99
Gothenburg, 203
New York, 1,160
Christiania, 104

Gypsum—
New York, 2,601 c.

Litharge—
Antwerp, 17 c.
Copenhagen, 12
Genoa, 11
Amsterdam, 11

Magnesia—
Genoa, 50 c.

Manganese—
Bilbao, 625 c.

Magnesium Carbonate—
Genoa, 20 c.

Painters' Colours—
Naples, 25 c.

Phosphorus—
Genoa, 38 c.

Soda—
Antwerp, 212 c.
New York, 4,000
Rotterdam, 141
Amsterdam, 118

Soda Ash—
Copenhagen, 404 c.
Genoa, 27
Odense, 390
Christiania, 186
Venice, 616
New York, 496

Soda Crystals—
Gibraltar, 403 c.
Horsens, 47
Nakskov, 193
Odense, 123

Sodium Hyposulphite—
New York, 506 c.
Genoa, 20

Sodium Silicate—
Bilbao, 224 c.
Genoa, 203

Sodium Sulphate—
Copenhagen, 244 c.
Venice. 807
Christiania, 200

Sulphur—
Copenhagen, 300 c.
Dunkirk, 1,000

Superphosphate—
Genoa, 5,005 c.
Venice, 6,800

GOOLE.

Week ending January 27th.

Alkali—
Dunkirk, 30 dms.

Benzol—
Rotterdam, 19 cks.

Chemicals *(otherwise undescribed)*
Rouen, 20 tierces

Coal Products—
Boulogne, 1 css.

Dyestuffs—
Boulogne, 2 cks.
Ghent, 7 47 dms.

Manure—
Bruges, 250 bgs.
Ghent, 478

Pitch—
Antwerp, 506 t.

GRIMSBY.

Week ending January 30th.

Chemicals *(otherwise undescribed)*
Antwerp, 1 cs. 16 cks.
Dieppe, 56 8 dms.
Hamburg, 4 3
Rotterdam, 35

Coal Products—
Dieppe, 35

Dyestuffs *(otherwise undescribed)*
Dieppe, 1 ck.

PRICES CURRENT.

WEDNESDAY, FEBRUARY 17, 1892

PREPARED BY HIGGINBOTTOM AND CO., 116, PORTLAND STREET, MANCHESTER.

The values stated are F.O.R. at maker's works, or at usual ports of shipment in U.K. The price in different localities may vary.

	£	s.	d.
Acids:—			
Acetic, 25 °/₀ and 40 °/₀ .. .. per cwt.	7/- & 11/-		
,, Glacial .. .. ,,	50/-		
Arsenic, S.G., 2000° .. .. ,,	0	13	6
Fluoric .. .. per lb.	0	0	3¾
Muriatic (Tower Salts), 30° Tw. .. .. .. per bottle	0	0	10
,, (Cylinder), 30° Tw. .. .. ,,	0	3	0
Nitric 80° Tw. .. .. per lb.	0	0	2¼
Nitrous .. .. ,,	0	0	1¾
Oxalic .. .. nett	0	0	3½
Phosphoric, 1750° .. .. ,,	0	0	11½
Picric .. .. ,,	0	0	10¼
Sulphuric (fuming 50 °/₀) .. .. per ton	15	10	0
,, (monohydrate) .. .. ,,	5	10	0
,, (Pyrites, 168°) .. .. ,,	3	5	0
,, (,, 150°) .. .. ,,	1	5	0
,, (free from arsenic, 145°) .. .. .. ,,	1	7	6
Sulphurous (solution) .. .. ,,	2	15	0
Tannic (pure) .. .. per lb.	0	1	2
Tartaric .. .. ,,	0	1	0½
Arsenic, white powdered .. .. nett per ton	11	5	0
Alum (loose lump) .. .. ,,	5	5	0
Alumina Sulphate (pure) .. .. ,,	5	0	0
,, ,, (medium qualities) .. .. .. ,,	4	15	0
Aluminium .. .. per lb.	2s. 8d. to	0	3	2
Ammonia, ·880=28° .. .. per lb.	0	0	3
,, =24° .. .. ,,	0	0	1¾
,, Carbonate .. .. nett	0	0	3½
,, Muriate .. .. per ton	21	0	0
,, ,, (sal-ammoniac) 1st & 2nd .. per cwt.	35/- & 33/-		
,, Nitrate .. .. per ton	40	0	0
,, Phosphate .. .. per lb.	0	0	10½
,, Sulphate (grey), London .. .. .. per ton	10	7	6
,, ,, (grey), Hull .. .. ,,	10	7	6
Aniline Oil (pure .. .. per lb.	0	0	8¼
Aniline Salt ,, ... ,,	0	0	7
Antimony .. .. per ton	70	0	0
,, (tartar emetic) .. .. per lb.	0	1	0
,, (golden sulphide) .. .. ,,	0	0	10
Barium Chloride .. .. per ton	7	15	0
,, Carbonate (native) .. .. ,,	3	10	0
,, Sulphate (native levigated) .. .. .. ,,	45/- to 75/-		
Bleaching Powder, 35 % .. .. nett	7	10	0
,, Liquor, 7 % .. .. ,,	2	10	0
Bisulphide of Carbon .. .. ,,	11	15	0
Chromium Acetate (crystal .. .. per lb.	0	0	6
Calcium Chloride .. .. per ton	2	5	0
China Clay (at Runcorn) in bulk .. .. .. ,,	17/6 to 35/-		
Coal Tar Dyes:—			
Alizarine (artificial) 20 % .. .. per lb.	0	0	8¾
Magenta .. .. ,,	0	3	9
Coal Tar Products			
Anthracene, 30 % A, f.o.b. London .. per unit per cwt.	0	1	2½
Benzol, 90 % nominal .. .. .. per gallon	0	2	8
,, 50/90 ,, ... ,,	0	1	10
Carbolic Acid (crystallised 40°) .. .. per lb.	0	0	5⅛
,, (crude 60°) .. .. per gallon	0	1	1
Creosote (ordinary) .. .. ,,	0	0	1
,, (filtered for Lucigen light) .. .. ,,	0	0	2
Crude Naphtha 30 % @ 120° C. .. .. .. ,,	0	0	11
Grease Oils, 22° Tw. .. .. per ton	2	5	0
Pitch, f.o.b. Liverpool or Garston .. .. .. ,,	1	14	0
Solvent Naphtha, 90 % at 160° .. .. .. per gallon	0	1	1
Coke-oven Oils (crude) .. .. ,,	0	0	3
Copper .. .. per ton	43	17	6
,, Sulphate .. .. ,,	14	15	0
,, Oxide (copper scales) .. .. ,,	45	0	0
Glycerine (crude) .. .. ,,	13	0	0
,, (distilled S.G. 1250°) .. .. ,,	45	0	0
Iodine .. .. nett, per oz.	0	0	9
Iron Sulphate (copperas) .. .. per ton	1	12	6
,, Sulphide (antimony slag) .. .. ,,	2	0	0
Lead (sheet) for cash .. .. ,,	12	0	0
,, Litharge Flake (ex ship) .. .. ,,	14	10	0
,, Acetate (white ,,) .. .. ,,	25	15	0
,, ,, (brown ,,) .. .. ,,	17	10	0
,, Carbonate (white lead) pure .. .. .. ,,	20	0	0
Nitrate .. .. ,,	20	10	0
Lime, Acetate (brown) .. .. per ton	6	12	6
,, ,, (grey) .. .. ,,	9	17	6
Magnesium (ribbon and wire) .. .. per oz.	0	2	3
,, Chloride (ex ship) .. .. per ton	2	7	6
,, Carbonate .. .. per cwt.	1	17	6
,, Hydrate .. .. per ton.	17	0	0
,, Sulphate (Epsom Salts) .. .. .. per ton	3	0	0
Manganese, Sulphate .. .. ,,	18	0	0
,, Borate .. .. per cwt.	2	15	0
,, Ore, 70 % .. .. per ton	4	5	0
Methylated Spirit, 61° O.P. .. .. per gallon	0	2	6
Naphtha (Wood), Solvent .. .. ,,	0	4	6
,, ,, Miscible, 60° O.P. .. .. .. ,,	0	4	10
Oils:—			
Cotton-seed .. .. per ton	18	10	0
Linseed .. .. ,,	20	0	0
Lubricating, Scotch, 890°—895° .. .. .. ,,	7	5	0
Petroleum, Russian .. .. per gallon	0	0	4½
,, American .. .. ,,	0	0	5½
Potassium (metal) .. .. per oz.	0	3	7
,, Bichromate .. .. per lb.	0	0	3¾
,, Carbonate, 90% (ex ship) .. .. .. per ton	18	10	0
,, Chlorate .. .. per lb.	0	0	5¾
,, Cyanide, 98% .. .. ,,	0	2	2
,, Hydrate (Caustic Potash) 80/85 % .. per ton	22	10	0
,, ,, (Caustic Potash) 75/80 % .. ,,	21	0	0
,, ,, (Caustic Potash) 70/75 % .. ,,	20	15	0
,, Nitrate (refined) .. .. per cwt.	1	2	6
,, Permanganate .. .. per cwt.	3	10	0
,, Prussiate Yellow .. .. per lb.	0	0	10¼
,, Sulphate, 90 % (ex ship) .. .. .. per ton	9	15	0
,, Muriate, 80 % (do.) .. .. .. ,,	7	17	6
Silver (metal) .. .. per oz.	0	3	5½
,, Nitrate .. .. ,,	0	2	10
Sodium (metal) .. .. per lb.	0	3	4
,, Carb. (refined Soda-ash) 48 % .. nett per ton	6	2	6
,, ,, (Caustic Soda-ash) 48 % .. ,, ,,	5	5	0
,, ,, (Carb. Soda-ash) 48% .. .. ,, ,,	5	7	6
,, ,, (Carb. Soda-ash) 58 % .. .. ,, ,,	6	7	6
,, ,, (Soda Crystals) .. .. .. ,, ,,	3	9	0
,, Acetate (ex-ship) .. .. ,,	16	15	0
,, Arseniate, 45 % .. .. ,,	10	10	0
,, Chlorate .. .. per lb.	0	0	7
,, Borate (Borax) .. .. .. nett, per ton.	29	10	0
,, Bichromate .. .. per lb.	0	0	2¾
,, Hydrate (77 % Caustic Soda) (f.o.b.) nett pr. ton (10 ton lots)	11	5	0
,, ,, (74 % Caustic Soda) ,, ,, ,, (10 ton lots)	11	5	0
,, ,, (70 % Caustic Soda) ,, ,, ,, (10 ton lots)	10	5	0
,, ,, (60 % Caustic Soda) .. ,, ,, (10 ton lots)	9	2	6
,, ,, (60 % Caustic Soda, cream) (f.o.b.) ,, (10 ton lots)	8	15	0
,, Bicarbonate .. .. ,,	6	15	0
,, Hyposulphite .. .. ,,	7	15	0
,, Manganate, 25% .. .. ,,	9	0	0
,, Nitrate (95 %) ex-ship Liverpool .. .. per cwt.	0	9	6
,, Nitrite, 98 % .. .. per ton	30	0	0
,, Phosphate .. .. ,,	15	10	0
,, Prussiate .. .. per lb.	0	0	8
,, Silicate (glass) .. .. per ton	5	7	6
,, ,, (liquid, 100° Tw.) .. .. .. ,,	4	7	6
,, Stannate, 40 % .. .. per cwt.	3	5	0
,, Sulphate (Salt-cake) .. .. per ton.	1	17	6
,, ,, (Glauber's Salts) .. .. ,,	1	15	6
,, Sulphide .. .. ,,	7	15	0
,, Sulphite .. .. ,,	6	12	6
Strontium Hydrate, 100% .. .. ,,	8	10	0
Sulphocyanide Ammonium, 95 % .. .. per lb.	0	0	7¼
,, Barium, 95 % .. .. ,,	0	0	5
,, Potassium .. .. ,,	0	0	7¼
Sulphur (Flowers) .. .. per ton.	10	0	0
,, (Roll Brimstone) .. .. ,,	8	0	0
,, Brimstone: Best Quality (nominal) .. ,,	6	10	0
Superphosphate of Lime (26 %) .. .. ,,	2	7	6
Tallow .. .. ,,	26	10	0
Tin (English Ingots) .. .. ,,	93	0	0
,, Crystals .. .. per lb.	0	0	6¾
Zinc (Spelter) .. .. per ton	21	5	6
,, Chloride (solution, 96° Tw.) .. .. .. ,,	6	15	0

THE

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AND

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CURRENT TOPICS.

RIVER POLLUTION AND POLLUTERS.

It is not now far short of six months since it was determined to form a joint committee to take steps to prevent the further pollution of the Rivers Irwell and Mersey. Many were the reasons which were advanced in order to emphasise the need for such a committee, and owing to the position which was taken up by this body in regard to enforcing its administrative powers, there seemed every promise of the improvement of these two rivers in particular being effected in a way which would not only overcome the evils complained of by the townships through which they flow, but do so without unduly harassing those manufacturers who assist in swelling the volume of polluting matter put into these rivers.

We have all along contended that it was unjust to subject manufacturers to severe or arbitrary measures without giving them due notice of the existence of such measures, and no one, we should think, can find cause for complaint on this ground against the actions of the Joint Irwell and Mersey Rivers Committee.

Knowing, as this committee does, that counter-argument, which is invariably raised by manufacturers when they are compelled to prevent pollution, that their trade will be driven away, the object of the committee has palpably been to persuade rather than compel, so that when compunction shall become necessary such steps will be strengthened by the fact that every opportunity for avoiding the evil day had been afforded and no avail made of those opportunities.

Still, for all this, it has been evident to those who have watched the proceedings of this committee that their leniency would not in all cases accomplish its end, and opposition would have to be looked for in various forms and localities.

Seemingly, the first note of war has been sounded, and we must confess that there is a ring about its tone which does not altogether reflect credit on those who sound it.

Bearing in mind that through the in-efficiency of the Pollution of Rivers Act the Local Government Board authorised the formation of the committee in question, it is disappointing to find those who begin to anticipate the pinching of the shoe, harking back to the old position, and saying that further measures are unjust, because legislative restrictions already exist in the form of this Act.

Again, why should exception be taken to the formation of special regulations in regard to these two rivers in particular?

If ever there were two cases calling for special measures in the matter of preventing pollution we should think the Irwell and Mersey were pre-eminently the two to be selected for such specialisation. The River Thames, despite all the bad names it has been called, is pellucid in comparison with such stygian streams as the Irk and Medlock, which do so much towards polluting the Irwell main stream. Would it not rather be more unjust to apply the extended powers, which

the Lancashire and Cheshire County Councils seek, to all the rivers in the country, as has been suggested, than to confine their scope to the most flagrant cases of pollution?

It is, however, futile to contend that nothing should be done because there is a possibility of certain industries being compelled to cease polluting the river. Unfortunately for the argument that the only alternative will be to close the works, the experiences of the past, in the paper-making industry for instance, have established a precedent to the contrary.

Seeing the benefits which have attended the manufacturer though being compelled to do something with his waste liquors, it should be the desire of those who are now likely to be called upon to stop polluting the Rivers Irwell and Mersey to endeavour to turn their misfortune, so to speak, into a source of good fortune, instead of fancying that by refusing to cry *peccavi* they will remove from their shoulders the onus of sooner or later purifying their effluents.

It follows as a logical deduction that the worst rivers should be subjected to the most stringent regulations, and surely the best way to remove the evil, now that a committee willing to meet manufacturers half way exists, is for polluters to endeavour to do the other half, and thus secure for themselves peace from further importunity.

THE COAL CRISIS.

The troubles which have been felt lately in the coal-producing districts are apparently coming to a head. The latest movement is one to compass the closing of all collieries in orderto allow the present stocks to decrease. The reductions in wages which have been put on the men in various districts are attributed to the fact that owing to the extensive stocks on hand, prices are accepted which are so low as to leave virtually no margin for profit. Consequently, reductions have to be made in the cost of the production. Fortunately, there does not seem to be a unanimity of opinion in the different districts as to the advisability of such a measure. In Wales the miners have to give a month's notice, beginning with the first of the month; whilst the Northumberland district objects to the movement altogether. However, in any case should the movement be put into practical form in any of the districts which are willing to accede to the proposal, it is to be hoped that those who thus seek to increase the price of coal justly, no doubt—will do so in moderation, bearing in mind that prices are not only bad in the coal trade, but there are ironworks in the North and mills in Lancashire which have felt the effect of poor prices, and will in all probability close altogether if the price of coal is unduly advanced, a result which will not benefit the coal trade in the long run, since half a loaf is better than no bread at all.

BRINE PUMPING SUBSIDENCES IN CHESHIRE.

GOVERNMENT ENQUIRY.

(Continued from page 133.)

Mr. Balfour Browne, Q.C., on behalf of the Salt Union, said his clients were largely interested in this matter—more largely interested than any other corporation or person in the district. After detailing the steps which were taken to get the Act of 1891, he said the arguments submitted when the bill was before the Committee were that the rock salt under a man's property belonged to him, and that if the person who was taking it away could be found an action would lie, but as they could not distinguish one man who took it away from a hundred other men who might contribute, the owner could not lay his hand upon one man and secure damages. It was thought reasonable that under these circumstances the whole of the pumpers in a district causing the damage should pay for that damage. For instance, if he could show that it was the pumping at Northwich that did the damage at Northw had a group of persons in Northwich who ought to pay sation for the damage done there. If he could show that not at all contribute to the damages at Northwich, then to lay their hand on Winsford for the damage at Northwi merely to make the Winsford pumpers pay for the damag district. That was the principle he started with, and he believed he could prove absolutely and incontestably. tended that the Act, instead of contemplating one distric templated a variety of districts, and the whole principle o to lay the damage upon the persons who did it. The pr the people at Winsford should pay for the damage done although even Professor Boyd-Dawkins admitted that evidence to show that the pumping at Winsford had any ever at Northwich, was unsound, unfair, and inequitable believe Parliament contemplated it, and he could not beli Government Board would give effect to it. The scheme the memorialists was ill-considered, and did not include where subsidences had taken place. All that the Nort wanted, apparently, was to shift the burden from their c on to the shoulders of the people at Winsford. The evid call would show that the conditions in Northwich different from those at Winsford. The damage done was also of a different character from that at Winsford. there were 35 closed mines at the present time, but in V were only two. One of the mines at Northwich was extent, and one at Winsford was a quarter of an acre in e facts showed that the two things were not upon a pari Northwich about half the brine was pumped from the min less than half was probably natural brine. All the brine on the other hand, was natural brine. There was anothe looked exceedingly serious in the immediate future f Brunner, Mond and Co., were about to tap a mine betwe the Witton mine there was only a very small barrier of s believed that the subsidences in that district would l indeed when Messrs. Brunner, Mond and Co., carried posed pumping operations in that place. With regard from rocksalt mines, he thought he would be able to sh pumping in Winsford would not affect it one iota. Not a was being pumped at Winsford except on the top rock, being proved below but found dry, and therefore the lev admit of brine from Northwich being pumped at Winsfo with regard to half the brine, and with regard to the othe tion of the continuity of the beds came in. With regard t startling thing to find that the beds were of different thic should suggest that the beds had been laid down under ditions. Another curious thing was that the brines o two places were entirely different in constitution, and th salt was not made. Another important point was that tained twice as much magnesia as the other, and that a the non-continuity of the beds.

Professor A. H. Green, who was then called, stated th nineteen years been a member of the Geological Sur Britain, and was now professor of geology at Oxford. an exhaustive examination of the ground between N Winsford, and had found what seemed to him most concl that there was no connection between the underground of brine at the two places. Three causes tended to pr hollows in the ground. Some, which were *bonâ-fide* sul been formed by the removal of something beneath, in rock salt. Others were old marlpits or sandpits or bricky been long abandoned. The third cause, which was a spread cause in this part of the country, occurred where covered with glacial drift. The glacial drift was not regular horizontal lines, but was in many cases shot or ti heaps, so that it accumulated in a mound form, and these mounds had so arranged themselves as to enclose h an outlet. The places marked as subsidences by the included specimens of all these three kinds of hollows.

Mr. Joseph Dickinson, of South Bank, Pendleton, sa retired after serving 41 years as mining inspector. For a of a century he was chief mining inspector, and he hac reports on the landslips in Cheshire to the Home Offic 1881. He had carefully watched the indications of the d the brine runs took as far as they were indicated on the s sidences and landslips. The brine pits at Northwic distinct, in his opinion, from those at Winsford. The da the subsidences was incomparably greater in Northwich t ford, and he therefore thought it would be unfair to co with Northwich. The subsidences in the neighbourhood were prevented from spreading by the "nipping" out c of rock salt southwards. The beds at Winsford were a out in a northerly and easterly direction. These facts ir

mind that there was a disconnection between the salt beds. The rock salt at Winsford was much thicker than it was at Northwich, and there was an overlying bed at Winsford which did not exist at Northwich. This also indicated want of continuity or separation of origin. Under these circumstances he thought that the pumping at Winsford was certainly not affecting Northwich.

Mr. T. Ward, managing director of the Salt Union, said he had lived in the neighbourhood of Northwich about 40 years, and had acquired very exhaustive information as to the saltfields of Cheshire. He was strongly of opinion that the Winsford district was absolutely separated from that of Northwich.

Mr. C. E. De Rance, C.E., said he had given great attention to the study of the brine question in Cheshire, and had come to the conclusion that the Northwich and Winsford districts were as separate as nature could possibly carve them. He concluded that they were absolutely separated from the absence of the upper bed of rock salt between the two areas, and because the old valley between them had become filled with glacial drift to a great thickness. He anticipated that there would be very serious damage done to Northwich by the proposed pumping operations of Messrs. Brunner, Mond and Co., and the Salt Union at Marston Pool and close to the Witton Hall mine.

The enquiry was then adjourned.

THE NITROGENOUS BASES PRESENT IN COTTON SEED.

By W. Maxwell.

THE nitrogenous bases choline and betaine have been shown to be present in the cattle foods prepared from the cotton seed. Choline was discovered in a sample of those foods by Prof. R. Bohm, in the year 1881. Bohm states that having received from a druggist an alcoholic extraction of a cattle food prepared from cotton seed, which food, on being fed as a diet to young cattle belonging to a farmer in Germany, had proved fatally poisonous. From the "alcoholic extraction" a large proportion of choline was obtained; but Prof. Bohm concluded that no other alkaloidal principles were present.

In the year 1882 a preparation of betaine was separated from the foods made from cotton seed by Prof. Ritthausen and Dr. Weger. The discovery of the latter nitrogenous base, and admixed with unknown proportions of choline, has made it appear desirable that a revision of the investigations made by the given authorities should be undertaken, and particularly on account of the different toxical properties ascribed to choline and betaine.

Prof. Gaehtgens, during experiments conducted in order to establish the toxical or non-toxical property of choline, observed that when 0·3 gram of choline was given to a strong cat, an immediate paralysis occurred. Further, when 0·5 grams was administered to an equally vigorous cat, death was almost instantaneous. So far it has been believed that betaine is a non-poisonous base; but the experiments made with betaine, in respect of its toxical properties, could be revised with some advantage.

It has thus appeared important to determine whether choline or betaine is present in the cotton seed, and the foods prepared from the seed in greatest quantity, and to estimate, approximately at least, the quantities of each of those bodies contained. And not only from a scientific standpoint is it desirable, but even more strongly so from a practical view, as the foods prepared from the cotton seed are used very extensively as a common article of diet for cattle.

The investigations were conducted as follows:—About five pounds of finely ground cotton seed cakes were extracted with 70 per cent. alcohol. The reason for extracting the material with dilute alcohol instead of using very dilute solutions of mineral acid was to avoid any possible action of the acid upon the choline, by which means the latter could be in part converted into betaine. After separation from the material the extract was distilled and the residue taken up in water. The aqueous solution was treated with lead acetate, the lead precipitate separated by filtration, and the excess of lead removed from the filtrate and the latter evaporated down to a syrupy residue. This residue was then extracted with 70 per cent. alcohol containing 1 per cent. hydrochloric acid, in which menstruum the alkaloidal bodies were taken up. The alcohol-hydrochloric acid extraction was brought into a deep beaker, and an alcoholic solution of mercuric chloride added. Instantly, on adding the mercuric chloride, an almost pure, white double salt of the nitrogenous bases began to separate out.

After standing for ten days a large proportion of the mercury-chloride double salts was separated from the liquid, the latter being set aside, and after standing some weeks a second crop of crystals was obtained. The double salts were dissolved in, and re-crystalized out of water, and after decomposition by means of hydrogen sulphide, the sulphide of mercury was removed by filtration. The filtrate containing the hydrochlorates of the bases was very slowly evaporated to a small volume, and then placed in a desiccator over sulphuric acid until the crystallization of the salts was complete. The hydrochlorate salts were free from colour and in the form of lucid and well-developed crystals. After all moisture had been absorbed from the crystals they were saturated with an ample volume of absolute alcohol. In absolute alcohol the hydrochlorate of choline went into solution with some small portion of the betaine salt. By this method an approximate estimation of the relative proportions of choline and betaine was obtained.

In order to obtain a quantitative estimation of the relative proportions of choline and betaine 7·248 grams of the hydrochlorate salts (water-free) were taken and treated with absolute alcohol. As it has been remarked, all the choline hydrochlorate salt was dissolved and some portion of the betaine salt. The alcohol solution of the choline salt was evaporated to dryness and re-extracted with absolute alcohol three times, when it was found that the hydrochlorate of choline was obtained practically free from betaine. The results obtained by this method of separation were as follows:—

Choline hydrochlorate=1·08 grams.
Betaine ,, =6·168 grams.

In the sample of cattle food, prepared from the cotton seed upon which this work has been done, the bodies choline and betaine appear to be present in the following relative proportions:—

Choline=17·5 per cent.
Betaine=82·5 ,,

The alcohol solution of the hydrochlorate of choline was treated with platinum chloride, and, after the recrystallization of the precipitate, a fine preparation of the platinum double salt of choline was obtained. A portion of the platinum double salt was broken up by means of hydrogen sulphide, and, after separation of the sulphide by filtration, the water solution of the hydrochlorate of choline gave the following characteristic reactions:—

With 1. Phospho-tungstic acid, white precipitate.
2. Phospho-molybdic acid, yellow precipitate.
3. Bismuth-potassium iodide, red precipitate.
4. Cadmium-potassium iodide, grey precipitate and was recrystallized.
5. Iodine, brown precipitate and was recrystallized.
6. Platinum chloride, yellow precipitate soluble in water.

The hydrochlorate of betaine, after separation of the choline salt as already stated, was further treated in order to obtain a preparation of pure betaine. The aqueous solution of the betaine salt was treated with phospho-tungstic acid, when a phospho-tungstate of the base was obtained. The latter salt was broken up with calcium hydroxide, and the lime salt formed filtered off. The filtrate was evaporated to a residue and the latter was extracted with strong alcohol, out of which the free betaine crystallized out. On recrystallizing a purer preparation was obtained.

Agricultural Notes.

POTATO DISEASE AND ITS REMEDY.

Owing to the increase of the potato disease in France, M. Gierard has been making an enquiry into the most efficient way of applying copper sulphate as a remedy. During the wet July and August in the year 1890 the potato crop was almost destroyed in the east of France, as the remedy against the disease was continually washed off by the rain, whereupon the parasitic fungus grew rapidly, to the destruction of the crop. After mature consideration, six different mixtures were arranged for dressing potatoes in order to prevent the disease, and experiments made as to their power of adhering to the leaves of the plants under the adverse influence of wet weather. The six mixtures were as follow:—

Bouillie Bordelaise.—2 kil. sulphate of copper, 2 kil. quicklime, 100 litres water.

Bouille cupro-caire pauvre en chaux.—2 kil. sulphate of copper, 1 kil. lime, 100 litres water.

Bouillie cupro-caire alumineuse.—2 kil. sulphate of copper, 3 kil. lime, 1 kil. sulphate of alumina, 100 litres water.

Bouillie cupro-sodique.—2 kil. sulphate of copper, 3 kil. crystals of soda, 100 litres water.

Bouillie cupro-calcaire sucrée.—2 kil. sulphate of copper, 2 kil. lime, 2 kil. molasses, 100 litres water.

Bouillie au verdet.—1 kil. 600 Paris green, 100 litres water.

A machine was constructed by which artificial rain could be directed upon a certain number of plants, and by it M. Girard was able to submit them to three distinct tests. The mode followed with each of the six compositions was this:— On twelve plants one of the compositions was spread with a distributor. From four of the plants half of the leaves were taken, in order to see how much solution was upon

them. The remaining leaves were submitted to 22 minutes' watering, and were picked in their turn and analyzed for comparison with the first picked leaves. Four other plants were afterwards submitted to a strong watering of six hours' duration, and the remainder to "gentle action" for 24 hours. From these plants leaves were gathered for testing in a similar way. The three degrees of watering were classified as under:—A "violent storm," corresponding to a fall of ·67in. of water in 20 minutes; a "heavy rain" of six hours' duration, when about ·59 in. fell; and a "gentle rain," which corresponded to ·40in. in 24 hours.

The annexed table illustrates the percentage of solution washed off the plants by the different waterings:—

Bouillie.	Percentage of solution removed from leaves by		
	Violent storm, 22min.	Heavy rain, 6 hours.	Gentle rain 24 hours.
Cupro-calcaire ordinaire (bouillie Bordelaise)	50 9	34 5	13 2
Cupro-calcaire faible en chaux	35·8	35·2	16·5
Cupro-calcaire alumineuse	32·7	24·5	15·9
Cupro-sodique	19·7	15·9	7·7
Cupro-calcaire sucrée	11·2	Nil.	Nil.
Au verdet	17·2	17·3	10·2

The above figures show:—(1) That the copper solutions used against the potato disease differ very greatly in their powers of adherence to the leaves; (2) it is owing to heavy rains and mechanical drainage that the copper deposit partially disappears; (3) that the *bouillie cupro-calcaire* (called *bouillie Bordelaise*) melts away most quickly; (4) that a diminution in the proportion of lime increases the solidity slightly, whilst an addition of aluminous matter does not produce much improvement; (5) that the *cupro-sodique* and the *verdet* have a power of adherence nearly double that of the preceeding mixtures; and (6) that the *cupro-calcaire sucrée* resists most strongly the water to an extent quite unexpected. It is to the latter mixture, then, says M. Girard, that attention should be given, and he recommends the use of this form of *bouillie*. This mixture is really the *bouillie Bordelaise* with the addition of a certain amount of molasses, and its ability to resist removal by rain should induce potato growers to try the method laid down.

THE EFFICIENCY OF COPPER SULPHATE.

An extensive series of experiments have recently been carried out by the Irish Land Commission, upon the efficiency of copper sulphate as a cure for potato disease. One of the mixtures employed in these experiments was as follows:—

Sulphate of Copper .....30 lb.
Quicklime .....15 lb. } per acre.
Water .....150 gallons }

The cost of this treatment when applied with the "Eclair" distributor is about 9s. per acre. The results of the experiments point to the conclusion that sulphate of copper is not an efficient remedy for the disease.

Unfortunately, these experiments are hardly comparable with those M. Girard made last year, since the experiments of the latter were conducted to test the value of copper sulphate as a preventative rather than an arrestive of the disease. It is greatly to be regretted that such extensive experiments should have been made, under conditions which render them useless as a confirmation of the results obtained by M. Girard, the Commissioners stating that their experiments must not be taken as meaning that copper sulphate does not *prevent* the disease if applied in time.

DRESSING WHEAT WITH SULPHATE AND NITRATE.

A correspondent writing to the daily press recommends March 1st as the best time to dress wheat with sodium nitrate, and relates the following in support of his statement:—"A neighbour asked me to look at a field of wheat early last February. Having nitrate of soda by him he wished to know when he should put it on. I said, 'Now.' He replied he was certain it was too soon; but he applied it at once, leaving half an acre undressed. What was dressed pleased him very much, but that left undressed was a failure. He is so satisfied about its being the right time that he is putting nitrate on his wheat now."

In reference to the use of sulphate of ammonia as a dressing for wheat he contends that sulphate of ammonia grows better samples of both grain and straw, which latter is altogether brighter; and where land is cold and the climate wet you also get a week or more earlier harvest with sulphate of ammonia than with nitrate of soda—say in such counties as lie round the district of Manchester. Three hundredweight per acre of superphosphate is a great help to all grain crops both in yield and in helping on the harvest. There is no better month than February to apply super, guano, and such manures; it may be too soon for nitrate on grass.

THE TEACHING OF AGRICULTUI

A LARGE and influential deputation from North Wal shire, together with representatives from the Cent of Agriculture, waited last week upon Sir William Hart President of the Council, with regard to the certificates o school teachers in agricultural science, urging that those colleges should be deemed equivalent to those granted by and Art Department at South Kensington for the purpose payment by results. Among the bodies represented were th College of North Wales (Bangor), the County Counci Wales, the Yorkshire College Agricultural Committee, Councils of the North, East, and West Ridings, the York of Agricultural Clubs and Chambers, and the Central Agriculture. Amongst those present were Lord He Kenyon, Sir E. Grey, M.P., Mr. F. S. Powell, M.P., M Tracy, M.P., Mr. T. Lewis, M.P., Mr. W. Rathbone, A. H. Acland, M.P., Mr. Osborne Morgan, M.P., Kenyon, M.P., Mr. S. Smith, M.P., Mr. John Roberts T. E. Ellis, M.P., the Bishop of St. Asaph, the Dean of Hon. J. C. Dundas, Colonel Legard, Mr. Lloyd Price, M Winder, etc.

Lord Herries, in introducing the deputation, expressed the absence of Lord Ripon, who was to have performed th he was suffering from influenza. For months past the classes and lectures in some of the counties, for the h elementary school teachers, in order that they might receiv in science bearing upon agriculture. Those classes had largely attended, and the teachers had thus been able instruction in the science of agriculture as a specific subje Code. But, besides that, what they were anxious to do certificates which would enable them to hold evening c science of agriculture, and that they should be able by m certificates granted by the Colleges to obtain payment by the Science and Art Department at South Kensington. University Extension schemes examinations by South Ken been dispensed with in certain cases, and the deputation that principle should be extended to those who held certificates.

Professor Bodington, principal of Yorkshire College, said been found desirable to make the teaching cover such a enable those who received it to carry on classes up t Kensington standard, and several of the students at that C the advanced stage certificates of South Kensington. consisted of twenty-two lectures, and private study was side by side with the lectures and papers.

Colonel Legard also supported the prayer of the deputati

Mr. Rathbone, M.P., said that the scientific teaching of was a comparatively new departure, having been hitherto practised. They had, even including South Kensington, to learn, and he would strongly urge that the Yorkshire Colleges, which had taken so active a part in the matte their work so well, should be given a certain latitude of power of extension in connection with the teaching of agricu

Mr. Reichel, principal of the Bangor College, having spo

Lord Kenyon, on behalf of the North Wales landowner the good work which the North Wales University was expressed the hope that the Government would see th granting the request of the deputation.

Mr. A. H. Acland, M.P., as representing the County C North Wales, said that the central conference of represen were supporting their great new intermediate school scheme regarded the matter as one of very great importance, and the facilities asked for would be given to improve the means ing scientific agricultural instruction.

Sir William Hart Dyke, in reply, said that the difficulties all felt with regard to technical instruction, and especially instruction in agriculture, was owing partly to the succ Technical Instruction Act, and still more to the great imp had been given by the grant under the Customs and Excise was no doubt that throughout England and Wales Count had been at their wits' end to know what to do with the had been given them, and it was perfectly natural that difficul arise from time to time in the working of Acts so comp nature as those dealing with technical education. With re dispensation which had been given in the case of certain u they drew a great distinction between an examination university board examiner and such examinations as might be by the colleges, and he was not at all prepared to concede which they had urged with reference to the examinations. too large and important a question to be dealt with in such as that proposed by the deputation, and he could only pro that he would look carefully into the matter and see if some

could not be arrived at. He was glad to find that Yorkents was taking such an honourable lead with regard to and dealing in such a practical way with the grave pplying teachers not only in the elementary schools but lasses. As regards the agricultural teaching of the future, hat he was not altogether satisfied with the working of Instruction Act, and felt that there were many points, garded the provision of teachers or other matters, upon necessary to obtain further information before dealing er. He thought that some benefit might accrue if he were memorandum dealing with the difficulties which they had a representative conference were summoned of the County had to deal with the Act. He was not sure that a solution nd in that way, but he thought some good might come ssion. There was no doubt that the position of secondary England was unsatisfactory at the present time. They n excellent Act for Wales, and he thought little time lost before they placed secondary education in a better it is at present, though it was possible that political and es might stand in the way. The right hon. gentleman again promising to give the subject his careful con-

es having thanked Sir William for his courteous reception, withdrew.

THE SALT UNION.

wing circulars have been issued to the shareholders of the ion, Limited:—

ious to attend your general meeting on the 23rd inst., ly slowly recovering from a severe illness it is somewhat y medical adviser will allow me to attend a large, and ng, assembly at present. In that case, as the affairs of n have for some time formed a subject of controversy and as to the administration of the concern, I cannot refrain ddressing you on the subject of my connection with it; would repeat what I have previously written to the to the press—namely, that I did not seek the Salt Salt Union sought me. I repeatedly refused to join the stood out to the last, but by promises and assurances that thority, and management—which have been so eminently ing the last forty years in making Stoke Works not only fect of their kind in Europe, but, financially, the most would not in Worcestershire be interfered with, I was ly induced to join the Union, the first syndicate or union ything to do with in my life. Before many weeks had d myself in conflict of opinion with my colleagues, and so with the officers of the Union as to the administration stershire Works. Some of the clauses in my deed of been repeatedly and persistently infringed, to the loss ands to the shareholders. This was the case more or less ars 1889 and 1890, and has been to the present time. 1890 I felt myself impelled to tender my resignation as a under these circumstances I think it only right that the should know something of the respective value and ts of Stoke Works, notwithstanding the covert opposition ty and management, as compared with other works pur- Salt Union. The purchase-money for Stoke Works, and enances thereto in Worcestershire, was £600,000. which a term of years, if the deed of covenant was carried out y, the comparatively safe protection from competition e works, under certain stipulations, referring to my landed ding the salt works of Worcestershire, extending several alued at a sum nearly equal to the works. Besides, I e formation, and for the further protection of the Salt ded from twenty to thirty thousand pounds in acquiring property in and around Droitwich, which does not pay . Notwithstanding the opposition to my authority and ready referred to, the result has been for the three years ber last as follows:—The profits of Stoke Works only, the shareholders, have been upwards of £200,000., or of the entire purchase-money, or an average of more ent. per annum for the three years ending December, whilst the active capital of the other works of the Salt entirety has only earned an average of 7 per cent., if it the same ratio as Stoke Works the result would have of £130,000. more profit, equal to an additional 6½ per dinary shareholders. It has been said by your chairman prices, against which I repeatedly protested, and which alled into existence several competing works, enhanced the profits. *Prima facie* that so appears, but not in fact The high prices, by diminishing your sales, shut up a large percentage of the best of the Worcestershire works at Stoke Prior, which for many years had been in active operation, and which have remained entirely closed from the first few months of the establishment of the Union to this day. Had my advice been adopted, by charging moderate and fairly remunerative prices, these works would have been kept in full operation, and the profits, steadily maintained, would have been equal to, or in excess of, those which have accrued from the short-lived extravagantly high prices, besides averting the competition, which has been so disastrous. I may remind you that I am still by far the largest shareholder. I have 10,000 shares, besides debentures, together £125,000. which with the profits of £200,000. makes 55 per cent. of the entire purchase-money of my works. I have never bought or sold a single share from the first month of the Union. I have no salary or other allowance, not even my travelling expenses, having, without prejudice, voluntarily waived the same in favour of the shareholders, besides—since the reduction in prices now reverted to—having, in order to get back the lost trade for the benefit of the shareholders, contributed without prejudice a considerable portion of my legitimate profits, intended to pay trade expenses, such as travellers, agents, etc., and which, unfortunately, in some cases—London in particular—has involved me in a loss. There have doubtless been serious errors in the administration of your property, which may perhaps be ascribed to errors of judgment. In regard to your directors, I am in justice bound to say you have on your Board not only gentlemen of high social position, men of wealth and men of honour, but equally important would be the possession of a practical knowledge of the trade in all its bearings. I now come to the main object of this communication. A general meeting of shareholders is hardly the place to discuss dispassionately the best means of amending errors of the past and reorganising a large and important concern. I therefore appeal to you to appoint a committee, consisting of a limited number of large and independent shareholders, to confer and report upon the best means of reorganisation. I assure you that, so far as Worcestershire is concerned, such a step is imperative if the trade is to be made the most of for the shareholders. I shall be glad to render any aid in my power, and I court the most searching investigation into every act of mine connected with the Salt Union. I am sincerely in sympathy with the shareholders, not only because I am the largest, but also because I feel for those comparatively small holders who can ill afford to lose any portion of their investment. Notwithstanding errors of the past the Salt Union may, under the management of zealous and practical men of business, continue to pay fairly good dividends. At my age I cannot be expected to do much more than advise, in giving the benefit of 48 years' experience, and that only for a limited period; but if I can thereby benefit the general body of the shareholders, I am on their behalf further disposed to make any reasonable pecuniary sacrifice if they, or a committee appointed by them, think my advice and aid worthy of their consideration.—I have, etc.,

JOHN CORBETT.

"Stoke Salt Works, Worcestershire,
"18th February, 1892."

"Salters' Hall Court, London, E.C.,
"20th February, 1892.

"With reference to the letter addressed to you by Mr. John Corbett, dated 18th inst., I will deal with it at the ordinary general meeting on Tuesday next, 23rd inst., and a printed report of the proceedings will be sent to you afterwards. In the meantime I wish to say that the directors will cordially welcome the appointment of a committee of large and independent shareholders, as suggested by Mr. Corbett, to 'confer and report upon the best means of reorganisation.' But in the opinion of the directors the need for such reorganisation exists only in the Worcestershire district, the only district in which the directors have been unable to effect any of the economies made possible by the formation of the Union. This inability is the result of the attitude of Mr. Corbett, under his agreements and deed of covenant, which stipulate that he should be deputy chairman and managing director or general manager of the Union in the Worcestershire district, and which give him complete control of the works which he has sold to the Union. Mr. Corbett was deputy chairman and managing director of the Worcestershire district from the incorporation of the Union until the ordinary general meeting in February, 1891, and is now general manager for that district as well as sole distributor of the salt made at the Stoke Prior and Droitwich Salt Works—a dual interest which has not operated to the advantage of the shareholders. Most of Mr. Corbett's observations apply to a period when he was deputy chairman of the company. The negotiations of the present directors with Mr. Corbett have been rendered abortive by the prohibitive terms asked by him for the surrender of his distribution and agency businesses.

"Yours faithfully,

"LIONEL ASHLEY, Chairman."

ALUMINIUM AND SODIUM.

THE great increase in the amount of aluminium used for manufacturing purposes during the last few years, has resulted in considerable reductions in the price of this metal. There is of course a lot due to electricity for bringing about such a marked diminution in the price, which but three years ago was about a sovereign a pound, whereas to-day it is quoted in our prices current at 2s. 10d. to 3s. 4d. per pound. Still, without a doubt, seeing the enterprise with which the production of Aluminium, by the aid of sodium, was backed, very great reductions would have been effected even in this process, which is necessarily somewhat costly.

This has moreover proved to be the case, and pure aluminium can now be produced containing from 98 to 99%, in the form of sheets at 5s. 9d. per pound.

Even though this figure is somewhat in advance of the present current price, still the attainment of this figure has only been accomplished by a great reduction in the price of sodium. At first sight it may appear that this reduction in the price of sodium is not of any great importance, but it must not be forgotten that while the use of aluminium on account of its lightness, of its being unaffected by sulphur or moisture, has rendered it invaluable in the manufacture of instruments, chemical balances, and aluminium bronze; at the same time sodium has passed out of the category of philosophical curiosities into the sphere of industrial usefulness.

In 1888 the price of sodium was reduced to six shillings in accordance with the increased cheapening, which was entailed in the production of aluminium, shortly after it came down to five shillings, and subsequently to four, whereat it has remained for a long time. The Aluminium Company Limited, of Oldbury, now, however, are able to offer sodium at as low a figure as 2s. 10d. per pound, a long jump from four shillings. This price is only for ton lots and upwards, however, but it can be obtained in small quantities at 3s. 4d., which is still well under the old price. The importance of this change will be especially felt in the manufacture of silicon, borax, and magnesium, in which it is now used, and also in the preparation of sodium amalgam for the purposes of gold and silver extraction.

CHEMICAL PRODUCTS IN HUNGARY.

A FOREIGN Consul in Buda-Pesth gives the following report respecting the chemical manufactures of Hungary:—The only really large chemical works in Hungary are those belonging to Mr. Fritz Muller, at Nagy-Bocsko, near Marmaros-Sziget, in the Debreczin district. The raw material principally employed consists of pyrites, from which sulphuric acid and sulphur are extracted in large quantities. As the works are in the neighbourhood of the forests, and salt mines belonging to the Government, they obtain at a very low price the wood required for fuel and the raw salt which serves as a base for the production of various soda salts. They also produce muriatic and pyroligneous acid. There are also chemical works in Fiume, which have been long established, and produce sulphurte acid from sulphur imported from Italy, the annual production amounting to 25,000 quintals.* About 15,000 quintals of sulphate of alumina, and also manufactured in this establishment, find a ready sale among the paper makers of the country. There are also some works where animal charcoal is produced for the use of the sugar refiners, the most important being in Buda-Pesth, which is capable of consuming about 60,000 quintals of raw material.

MANNESMANN TUBES.

We hear, says Kuhlow's Review, that the Mannesmann tubes are very much used in South America, especially for conducting water in the saltpetre neighbourhood. The strength of the Mannesmann tubes is also on advantage for transport by sea. For example, last year a large order was executed by a Belgian firm, and the goods (which were cast-iron pipes) were shipped for America, but encountering heavy weather 54 of these were broken by the time they reached their destination. Another experience of the same kind caused considerable loss to a Glasgow firm. No case, however, has come to light in which a Mannesmann tube has been broken by transport, and this is due to the firmness with which the fibres are welded together by the cylindrical method which is employed. There have been already plenty of proofs given as to the ease with which the Mannesmann tubes can be bent and knocked about without suffering any injury. These tubes are joined together with socket joints and are produced in the same form as before, so that the method of having them down in no way differs from that hitherto employed. At the present time this firm can produce these tubes up to 400 millimetres in length and with an equal strength of wall, but in four or five weeks a specimen will be exhibited measuring as much as 600 millimetres.

* *A quintal equals* 1 cwt. 3 qrs.—Ed. *C. T. J.*

NEW COMMERCIAL PROCESS FOR THE MANUFACTURE OF OXYGEN.

A PLANT has recently been put down near Manchester for the manufacture of oxygen gas on a commercial scale produced upon the lines of Parkinson's Patents.

The plant, which we had the pleasure of seeing in operation a few days since, was capable of producing 1,500 cubic feet of oxygen per 24 hours, and consists of a circular furnace heated by Dowson gas, generated in a Dowson producer, which forms part of the furnace. In the furnace five retorts are suspended, four of which are charged with a specially prepared mixture of china clay and potassium permanganate, the fifth and central retort being empty, merely acting as a superheater.

The retorts are made of cast iron, and each forms practically a large U tube, having an internal vertical flue in each limb of the U. The hot gases of the furnace having free passage through this flue ensure the contents of the retort being heated evenly throughout. This end is further aided by conducting rings or lugs cast on to the outside of the retort and the internal flue.

On the top of the furnace and resting on substantial girders, which also form the supports from which the retorts are hung, are fixed (on opposite sides) two sets of compressing and vacuum pumps. These pumps force the air, after drawing it over lime through a caustic soda purifier into the superheater, and from thence into one pair of retorts charged with the mixture previously mentioned; at the same time exhausting from the other pair of retorts, first the residual nitrogen and then the oxygen gas itself. The separation of these two gases is regulated by an automatic valve, the oxygen gas not being evolved again until a vacuum of 25 inches of mercury is obtained. In addition to performing these functions these pumps are made to operate automatically the reversing valves, which turn the air first into one pair of retorts and then into the other. There is also one other point which is worthy of note. The vacuum cylinders are jacketed, and the air before being forced to the superheater is circulated through these jackets, becoming partially heated before entering the furnace. The composition with which the retorts are charged is prepared by intimately mixing finely powdered permanganate of potash with from 12 to 15% of its weight of good kaolin, and working into a stiff paste with water. It is then divided into pieces about the size of a walnut, and dried in a vessel under vacuum, the temperature being gradually raised meantime to 100° C. or thereabouts. By this means the composition assumes a highly porous and spongy state, combined with a solidity and firmness which enables it to be readily handled and transported as required without falling to pieces or crumbling. About 7 cwt. of the mixture is required to charge a retort.

The principle of the operation seems to be that the mixture in the retort contains potassium manganate, which is converted into permanganate and again reduced, but the precise cycle of the chemical reaction is apparently at present not completely worked out. The chief advantages claimed are that the permanganate mixture lasts for a very long time, and is unaffected by moisture or carbon dioxide. The oxygen produced has not been tested by analysis as yet, but compares favourably in practical use with its rivals. The cost is reckoned to come safely within the margin of 1s. to 1s. 6d. per 1,000 feet.

THE COPPER STATISTICS FOR 1891.

THE deliveries of copper in England and France during December, according to the statistics of Messrs. H. R. Merton and Co., amounted to 10,450 tons, while the supplies were 9,374 tons, the excess consumption therefore being 1,076 tons. The deliveries for the whole year amounted to 122,441 tons, being 8,822 tons over the deliveries. On the 31st December of the past four years the stocks were as follows:—

1891	56,544 tons	1889	98,847 tons.
1890	65,366 ,,	1888	104,105 ,,

The price at the close of the year for Chili bars was £46. 15s. per ton, an increase on November of £2. 2s. 6d., which was the lowest point touched. The highest quotation was £55. 5s., that being the price in May and June. The shipments from the various countries were as follows:—

Chili	20,500 tons.
North America	34,519 ,,
Spain and Portugal	22,173 ,,
Australia	6,450 ,,
Other countries	29,977 ,,
Total	113,619

Correspondence.

ot hold ourselves responsible for the opinions expressed by our correspondents.

GOLD-LINED VITRIOL RETORTS.

To the Editor of the Chemical Trade Journal.

has been interesting to watch the evolution in your pages lined Vitriol Retort and its ultimate perfection as disclosed tter of your esteemed correspondent, Professor Lunge. I of all to confirm from my own experience his condemna- lea that the German Patent Office is more rigorous in foreigners than with subjects of the empire. The chief n the cast iron rigidity of the administration, combined of appreciation of differences and similarities, which results l of perfectly new and valuable inventions and as frequent of others which we should regard as being palpably old. ated vitriol retort appears to be a case in point. It is some of your readers can verify my statement, that gold- ium retorts are not new; hence there can be no invention gold-plated platinum retort, and all that can be strictly Mr. Haraens is the method of gilding platinum employed his is very clearly described by Professor Lunge, and e simply an adaptation, without change, to a particular thods which have been in general use from pre-historic tinning of base metals is strictly analogous, save for the of the Haraens' process. But even the rolling is not new, ll known that before the introduction of electro-plating, cious metal were welded upon plates of less precious metal, led down to sheets of the desired thickness. An exactly ess was used in the manufacture of wire, drawing being for rolling. See *Ancient Workers and Artificers in Metal* . 70; also Pliny, book 34, chap. 43. There are various fications of very mature age describing the Haraens process ail, but with some other metal instead of platinum.

ery much like some of your readers to give their experience n sulphuric acid concentrating vessels; this experience if not, I have reason to believe, support that adduced by ange.

it has preceded, I think there is very grave reason to doubt the novelty, and probably the utility, of Mr. Haraens in- ours etc.,

WM. E. HEYS.

Our Book Shelf.

S OF SUGAR MACHINERY. By Watson Laidlaw & Co.; 132 pp., numerous woodcuts. Glasgow, 1892.

ogue of the chemical and sugar machinery section of this firm of engineers consists chiefly of a description of the lications of the "Weston" Centrifugal Machine, of which the sole makers. Two forms of this machine are made, Suspended, or overdriven machine, and the Pivot, or under- hese two types are shown arranged in various ways, and pugmills, sugar breakers, mixers and conveyors. On omplete curing plant is shown, designated the "Concrete uring Plant, the several parts of which are afterwards n turn. Apart from the centrifugals, which form the most feature in the plant, the description of the air compressor or blowing the sugarloaves out of the sugar-box into the friction pulley by which the centrifugals are operated, and peed diagonal steam engine, from whence the requisite btained, will be found interesting and worthy of notice. ntion is called to the patent safety governor, with which all gals made by this firm are fitted.

ntages of this governor are such that it recommends itself to machinery running at high speeds, whether centrifugal or not. ent forms of steaming apparatus for keeping the perforations ets clear are shown, two of which are particularly noticeable of the simple but ingenious method by which the dry steam from the condensed. The last section of the catalogue, ughout, is got up in excellent style, and profusely illustrated, o numbered drawings of the details of the plants described oing portions, so that by reference to the catalogue num- articular part can be ordered with the greatest ease and

an index at the end, so that nothing is left undone towards catalogue as complete and useful as it is possible to do.

Reports of Companies.

DIVIDENDS.

BELL'S ASBESTOS COMPANY (LIMITED).

The directors of Bell's Asbestos Company (Limited) recommend a balance dividend of 7s. 6d per share, which, with the interim dividend paid in July last, makes a total distribution of 10 per cent. for the year. The amount to be carried to reserve is £5,000. and to be carried forward £4,538.

WIGAN COAL AND IRON COMPANY.

The directors of the above company have just issued their report for the half-year ending December 31st, and state that the output and sales have increased during the half-year, but the selling prices of fuel have again been lower. No alteration has, however, been made in the wages paid to the colliers. The furnaces, in connection with the iron works, in operation, have continued to work well, and the plant of the steel works has been kept fairly employed; but selling prices have fallen. The accounts for the half-year show a profit of £64,714. on the whole operations of the company; to this the sum of £2,071. has been brought forward from last year, making together £66,785. available for dividend. The directors recommend that a dividend of 7 per cent., free of income-tax, should be paid, which would absorb £63,340., leaving £3,445. to be carried forward.

Trade Notes.

ILLICIT DISTILLING.—John Sydney Green was fined £100. at Bradford recently for keeping an illicit still. The defendant, who is about 70 years of age, has been half a dozen times convicted on similar charges.

TIPS FOR TRADERS. — Tile-making plant is enquired for from Mexico. In Bolivia and Peru there is a demand for Enamelled and Tinned iron wares; while there is a want of Manure Spreaders and general agricultural machinery in Cuba.

MANUFACTURING HYDROGEN DIOXIDE.—Messrs. William Burton and Sons have purchased the entire interest of Thomas and Dower, Limited (in liquidation), and will install special plant at Bethnal-green for the manufacture of hydrogen peroxide.

A NEW PETROLEUM STEAMER.—The Naval Construction and Armaments Company, Barrow, have received an order to build two 5,000 ton passenger steamers for the West Indian and Pacific Steamship Company. They have also received an order for a steamer of 5,000 tons to carry petroleum in bulk.

MINERAL WAX.—A substance very similar to bees' wax has recently been washed ashore on the Coast of Oregon, in considerable quantities. It is sold in Astoria at the same price as bees' wax. It has been stated by an expert to be what is known as mineral wax, which is a hydrocarbon derived from fossiiised resinous trees of the tertiary age.

RECENT TRADE MARK.—Rudder Brand, with sketch of boat-rudder, on which are B., T. & Co.; for alkali, ammonia, soda alkali soda ash, etc., etc. By Bowman, Thompson & Co. (Ltd.), 13, Harrington-street, Liverpool. The essential particulars are the wood rudder and the device, being a rudder, the added matter being disclaimed. 160,153.

A NEW BARIUM COMPOUND.—According to the statement of Mr. E. Péchard, he has prepared an explosive compound of barium. By adding baryta-water to a mixture of chromic acid and hydrogen peroxide he obtained a chamois-coloured precipitate, which, when dried, detonated with violence when heated or struck. The formula of the compound has not as yet been definitely determined.

MINERAL PAINT.—A wonderful discovery of oxide of iron paint is reported from Northumberland county, N. B. It is located about twenty miles from the town of Newcastle, and an assay shows ninety-six per cent. of pure oxide of iron. Mr. Brumell, of the Dominion Geological Survey, who examined these deposits, says there is no similar deposit known to scientists. It does not require any refining or manufacture, but it is ready for mixing in oil when it comes from the ground, 2 pounds giving the required "body" to a gallon of oil. It may also be used for colouring, and is several times more powe any pigment in use. It is considered a bonanza. Two com interested in these areas, which are miles in extent.

THE MAGNETIC PROPERTIES OF LIQUID OZONE.—Professor James Dewar, who recently demonstrated the magnetic properties of liquid oxygen, in a communication to the Royal Society, states that he is making further investigations on the properties of liquid oxygen, and moreover that he has found liquid ozone to be highly attracted in the magnetic field.

SECURING PURE FOOD.—Amongst the various bills brought into Parliament this session are two introduced by Mr. Quilter and Dr. Cameron respectively. One for securing the purity of beer, the other by the last mentioned gentleman being an amendment of the Sale of Food and Drugs Acts of 1875. Both bills were brought in and read for the first time last week.

THE MANCHESTER ZINC AND AMMONIA CO.—We are informed that the above mentioned firm has transferred its business and works to Messrs. Grimshaw Bros., Limited, Canal Works, Clayton, who will carry on the business conducted originally by the first mentioned firm. Messrs. Grimshaw Bros., Limited, are so well known that it is hardly necessary to add that all orders placed with them are sure to be carefully and promptly executed.

THE WILLOWS IRONWORKS.—The engineering plant, stock-in-trade, patterns, &c., of this works will be sold by Messrs. E. Rushton & Son, at the works, Accrington, on March 2nd, 3rd, 4th and 7th, 1892. In addition to a large quantity of machinery there are two boilers and several horizontal and vertical steam engines. The stock-in-trade is chiefly textile machinery.

THE PULSOMETER ENGINEERING CO., LIMITED.—We have just received a very tastily got up pamphlet describing the advantages peculiar to the Pulsometer Pump made by this firm. One of the most interesting features is a reprint of an extract from a pump catalogue, issued in the year 1702, which contrasts strongly with the advertisements of the present day, seeing the pitch of refinement, we might almost say, to which advertisements have attained during recent years.

SALTPETRE IN AFRICA.—Enormous beds of saltpetre have been discovered by Dr. Peters, between Mount Kilima Njaro and the volcano Dongo Ngai. Also springs containing chlorine, bromine, and hydrogen sulphide. The greater part of this territory is said to be one large saltpetre bed. In Berlin there is a good deal of interest aroused as to the effect this discovery will have upon the output of the Chilian beds, which have hitherto enjoyed a monopoly in saltpetre.

THE INDUSTRIAL USE OF ELECTRICITY.—The increased utilisation and application of electricity for industrial purposes is evinced by the frequency with which patents in this direction occur. In support of this, two recent German patents may be cited—one being connected with the absorption of the frictional electricity generated by the drums in weaving looms, which is apt to twine the silken threads into clumps and balls; and the other a somewhat new modification of electrolytic bleaching.

ALLOYS FOR BEARINGS.—The following are some analyses of various alloys used for friction bearings, the composition of which it is often useful to have for reference:—Cornish bronze: Copper, 77·83; tin, 9·60; lead, 12·40; zinc, trace; iron, trace; phosphorus, trace. Ajax metal: Copper, 81·24; tin, 10·98; lead, 7·27; phosphorus or arsenic, 0·37. Car box metal: Lead, 84·33; antimony, 14·38; iron, 0·61; zinc, trace. Graphite bearing metal: Lead, 67·73; tin, 14·38; antimony, 16·73; iron, not determined; graphite, none.

THE CHEMIST AND THE DYER.—A recent French writer, while stating that not only print works but every dye works, however modest in dimensions, should have a laboratory of some sort, goes on to remark that many dyers have an instinctive repugnance for laboratory trials which may be explained and combated in a few words. Samples of cloth are shown to the dyer prepared on the small scale by such and such a method, either with new products which yield exceptional shades, or in some way which has an advantage over the usual way in economy. The process is tried on the large scale and very seldom gives the promised results, and it is then at once concluded that the trials made by the chemist are of no practical value. It must be acknowledged that this verdict is in many cases quite correct, but if the trial made on the small scale has been made carefully, and is actually done upon a reduced scale of the ordinary conditions which hold in the dye-house, its results may be depended upon.

PETROLEUM FUEL IN PITTSBURG.—The use of petroleum as a fuel has become quite extensive and quite a number of the industrial plants in and around Pittsburgh have adapted their furnaces to its use. The amount consumed daily is about 3,500 barrels in the district usually considered as Pittsburgh. The price of the fuel is 2s. 7d. per barrel, and although manufacturers withhold data regarding comparative costs of coal, gas, and fuel oil it is conceded that the cost of the last named is less, or at least, no greater than of coal. At the works of Howe, Brown and Co., oil is used throughout, except under a portion of the boilers, and the cost is below that when coal was used. The oil is pumped directly from the Lima field to Pittsburgh. At the terminus of the line it is run into tank cars and sent to the 39 esta using it.

EXTENSIVE AMMONIA SALES.—At the half-yearly gener of the Gas Light and Coke Company, held at the offices in road, Westminster, recently, Sir Frederick Mappin asked th whether it was true that the company's ammonia was all broker, who bought on his own account? The chair Makins, M P) replied *that the company only sold through one agent, who never bought a single ounce for him* result was that the company's gains by the sale of its residuals most favourably with those of similar companies throughout t The statement of accounts showed that the amount received half-year on the sale of ammon. liquor and sulphate of amm £63,795. 7s. 1d as compared with £65,223. during the cor half of last year.

THE UNION PLATE GLASS WORKS.—The above w closed recently, throwing 600 hands out of employment. of the hands, however, have not yet been discharged, having been kept on in the patent rolled glass departme stoppages are made chiefly in order to execute the laying do modern plant, so as to be able to keep pace with the incre petition of the present day. The offices will be kept on most The tender for the new machinery has been given to Messr and Company, whilst the structural alterations has been en Messrs Yearsley. It is thought that some of the men will taken on when the alterations are complete, and it is to be the wish may not prove to be the father of the thought, bu same may be eventually realised.

DIAMINE GOLD.—This new dye has just been patented b Leopold Cassella and Company. The shades procuced by on either cotton, wool, or silk are all equally good for eve fineness of tint It is a direct dyeing colour, easily dissolve light, and possesses an additional advantage over those col are fast to alkalies, by being also fast to acids. The test as ness to light extended over a period of three months, at t which period no change was noticeable. Loose cotton and dyed by the addition of 20% of common salt To obtain shades the goods are allowed to cool in the bath to about 120 padding on the printing machine the following is recommen litres water, 10 litres tragacanth solution, 40 grams. sodium p and 100 to 200 grams. of dyestuff. It can be discharged wi of tin and tin salt in the usual way.

NICKEL CARBONYL.—A note upon the "Products of Ox Nickel Carbonyl" is contributed by M. Berthelot to th number of the *Comptes Rendus*. M. Berthelot states t carbonyl behaves towards oxygen in a manner somewhat sim organic radicle. The oxides of nickel and carbon. The p its spontaneous oxidation do not consist entirely of the liqui preserved in a glass vessel under a layer of water without c long as air is excluded; but as soon as air is admitted, the slowly oxidises, and a quantity of apple-green hydrated oxide free from carbon is deposited. At the same time, a porti nickel carbonyl volatilises and oxidises in the air, formin cloud, which deposits upon all the objects in the neighbourh Berthelot has succeeded in collecting a considerable quanti white deposit, and has subjected it to analysis. He consider the hydrate of the oxide of an organic radicle containing nick

SERIOUS FIRE AT AN OIL REFINERY.—The London fire recently busily engaged on the banks of the Thames in atte subdue another great oil fire, which broke out shortly o'clock at the mills, Blackwall-lane, East Greenwich, o tenanted by Messrs. Greig and Co., oil refiners and seed This firm's property comprised three large buildings, used shops, stores, etc., and the fire originated in one of t feet long by 30 feet wide The discovery of the outb made by the police, who promptly informed the firemen street, Greenwich. When the first contingent of the briga at the scene a tremendously fierce fire was raging, the inflammable material stored in the place affording ready the flames The first building which had caught was bla end to end, and the adjacent buildings were becoming ign 3 o'clock, however, the three large buildings were involved one which had first caught was quite destroyed. For a the brigade worked in the face of great difficulties to su fire, but the morning had far advanced before the task accomplished.

SOCIETY OF CHEMICAL INDUSTRY MEETINGS, LONDON SE The next meeting of this section will be held on Monday, M 1892, when a paper on "The Dangers of the Manufacture of E will be read by Mr. Oscar Guttmann. Liverpool Section: A meeting of this section on Wednesday, March 2nd, 1892, Dr. G Sommer will read a paper on "Agricultural Fertilizers and Stuffs; and the Bill now before Parliament to regulate the sa

ıchester Section: On Friday, March 4th, 1892, when the of this section will be held, two papers will be read, one nan, F.I.C, on "The Manufacture of Oxygen on a scale," and the other by Mr. W. E Heys on "Explosions ygen acting on Fatty Matters." Yorkshire Section: The of this section will be held at Leeds on Monday, March ıen a paper on "Criticisms and Suggestions towards the of British Measures" will be read by Mr. Sydney ottish Section: The next meeting of this section will be ow, on Tuesday, March 1st, 1892, when three papers one by Professor W. Dittmar on the "Availability of sels for Chemical Operations in the Laboratory," the Mr. G. Watson, junr., on "The Preparation of Pure cid from Sodium Phosphate, and the third by Mr. W. J. ı "Bauxite."

ND IMPORTS FOR JANUARY.—The following is a com- exports and imports of various goods during the past he same month last year:—

TS OF FOREIGN AND COLONIAL MERCHANDISE.

ticles.		Quantities.	
		1891.	1892.
.. ..	cwts.	111,998	105,770
ınd Regulus. ..	tons.	16,103	15,389
ıd wet	cwts.	53,860	70,383
.. ..	tons.	25,400	29,395
da	cwts.	263,980	52,628
itearine	cwts.	111,525	85,118

ORTS OF BRITISH AND IRISH MANUFACTURES.

rticles.		Quantities	
		1891.	1892.
.. ..	cwts.	467,992	398,382
.. ..	tons.	36,113	25,626
inds)	cwts.	79,629	93,973
.. ..	lbs.	3,266,700	2,092,100
mical)	tons.	21,437	26,369
.. ..	tons.	4,211	5,461
.. ..	tons.	40,383	33,875

SALFORD GAS.

nating power is expressed in standard candles; the total sulphur in grains per 100 cubic feet. The car- calculated to volumes per cent. The determinations have on the gas supply to the Manchester Technical Labora- kfriars-street.

.	Illuminating power.	Ammonia.	Total sulphur.	Carbonic acid.
1	.... 15·3 ..	0·01 ..	18·4 ..	0·96
2	.... 14·5 ..	Nil. ..	22·26 ..	1·08
3	.... 13·3 ..	0·08 ..	19 63 ..	1·40
5	.... 15·0 ..	0·04 ..	20·08 ..	1·20
6	.... 14·0 ..	Nil. ..	20 77 ..	1·16
7	.... 13·7 ..	Nil. ..	13·5 ..	1·31
8	.... 13·0 ..	Nil. ..	17·67 ..	1·12
9	.... 13·9 ..	Nil. ..	20·02 ..	1·28
0	.... 14·1 ..	Nil. ..	23·07 ..	1·01
2	.... 15·0 ..	Nil. ..	18·88 ..	0·90
3	.... 12·9 ..	Nil. ..	20·21 ..	0·80
4	.... 14·9 ..	0·03 ..	24·77 ..	1·10

Market Reports.

PORT ON MANURE MATERIAL.

the week business has continued very slow, but without on in prices.

ontinues to be done on a moderate scale in mineral the lowest points touched, but these prices, especially for action, can hardly be remunerative, and some of the nsidering whether it would not be best to shut down

There is greater disposition to buy River Plate cargoes of bones for forward shipment, but shippers do not see their way to accepting prices offered, and we do not hear of any business in that position. For cargoes afloat, £4. to £4. 2s. 6d. nearest values. For crushed East India bones for shipment, £4 5s. nearest value, and parcels arrived will probably be obtainable at the same price For East India bone meal, for shipment, £4. 7s. 6d. now required for fair average quality. On spot this price hardly obtainable.

Nitrate of soda is very quiet at 9s. 4½d to 9s. 6d., according to test. Due cargoes are worth about 9s 4½d. per cwt., and December shipment 9s. 4½d. to 9s. 6d., according to size and test.

There is a moderate business doing in dried blood at 9s 6d. per unit, f.o r. at works. Nothing reported in fish guano on spot. Kainit scarce, and 45s. per ton, nett cash, in bags, ex quay Liverpool, required. Superphosphates unchanged, and a good business doing for export.

TAR AND AMMONIA PRODUCTS.

The Benzol market is quiet again, and 90s. after touching 2s. 9d. is being again offered at 2s. 6d without finding buyers. Anthracene is still without business, the nominal price for A quality being 1s, and for B 9d. Carbolic acid, creosote and solvent naphtha are dull though at old prices nominally, while pitch remains in good demand.

The sulphate of ammonia market is in a state of dead calm, so far as consumers' orders are concerned, and even the dealers seem less inclined to operate now, having apparently filled their requirements for this month. Business has been done at Hull and Leith at £10 7s. 6d., and at the latter port even £10 6s. 3d is reported. At Liverpool sulphate can be bought at £10. 5s., which may be also quoted as the market price for Beckton Outside London makes are value for £10. 7s. 6d. Nitrate is rather easier, spot parcels being freely offered at 9s 6d.

THE LIVERPOOL OIL AND COLOUR MARKET.

LIVERPOOL, WEDNESDAY.

OILS.—Palm oil continues steady but quiet. There was a fair business done early in the week, but the demand is again quieter, what sales have been made have been done in Lagos at £21. 10s quay; Accra £20. 5s.; and Old Calabar £20. 10s. per ton, both transit. Olive is not so steady. There has been rather more business doing, but at prices which favour buyers, values ranging between £35. 10s. and £40. per tun according to quality. Linseed has been very steady all the week and remains so, prices being unaltered at 19s. 6d. to 20s 6d. per cwt. in export casks. Cotton seed: Liverpool refined has advanced again to 18s. 9d. per cwt, the demand at that figure having improved also. This price has been maintained all the week, and it remains steady thereat. American has not changed, sellers remaining steady at 19s. 6d per cwt. Castor oil has been rather dull There was more business in the latter part of the week with moderate sales of good seconds Calcutta at 2$\frac{3}{16}$, and first pressure French at 2¾ per lb. Tallow has not improved, the market having been dull with practically no business doing. Prices nominally unchanged. Resin: common on spot remains unchanged; sales have been made to arrive at 4s. per cwt, but in other grades business is quiet with not much doing. Spirits of Turpentine are still on the advance; 26s. 6d. was reached early in the week, and to-day 27s. is the ruling price, a figure which has not been touched since November last, when it was quoted 27s. 3d. Despite the advance there is a good business doing, and the market is steady. Petroleum unaltered.

COLOURS unaltered. Ochres: Oxfordshire, common, £10., medium, £12., best, £15.; Derbyshire, common, 40s., medium, 50s., best, 60s. Welsh, best, 70s., seconds, 50s., and common, 18s.; Irish, Devonshire, 40s. to 45s.; French, J.C., 55s. to 60s.; M.C., 65s. to 67s. 6d. Umber: Turkish quiet. Devonshire, 50s. to 55s. White lead, red lead, and oxide of zinc unchanged. Venetian red, £6. 10s. to £10. Cobalt: Prepared oxide, 10s. 6d.; black, 9s. 9d.; blue, 6s. 6d. Zaffres: No. 1, 3s. 6d.; No. 2, 2s. 6d. Oxide of iron: common, £6.; medium, £10.; finest, £20.

THE METAL MARKETS.

LONDON, WEDNESDAY.—Pig iron dull; Scotch warrants closed at 40s. cash. Middlesbrough 35s. 5d. cash, and Hematite 45s. 5d. Copper, steady. Chili bars, G.O.B.'s and G.M B.'s closed at £43 13s. 9d. to £44. cash, and £44. 5s. to £44. 15s. three months. Tin firm; Straits closed at £89. 5s. to £89. 12s. 6d. cash, and £89. 10s

to £90. three months. Australian, £89. 7s. 6d. cash; English ingot, £92. 15s. to £93. Lead firmer: Spanish, £10. 17s. 6d.; English, £11. 2s 6d. Silesian spelter, ordinary, £21. 12s. 6d. to £21. 15s. Quicksilver: First hands, £7. 2s. 6d. Copper shares: unchanged, Cape 1 7/16 to 1 9/16; Copiapo 2⅛ to 2¼; Libiola 2¾ to 2⅞; Mason and Barry 4½ to 4⅝; Rio Tinto 16⅝ to 16¾; Tharsis 5 5/16 to 5 7/16; Namaqua 1⅜ to 1⅝; Panulcillo 9/16 to 11/16.

WOLVERHAMPTON, WEDNESDAY.—The market to-day wore a more confident tone. It is now becoming clear that there will not be much difficulty raised by the miners in this district, and this circumstance is having a reassuring effect upon trade. Orders, however, are still very restricted and improvement is greatly needed. Marked bars to-day were £8. to £8. 12s. 6d; second sorts £6. 15s. to £7.; merchant bars £6. 10s. and common £6. Sheets £7., singles; and £7. 5s. to £7. 10s. doubles. Pig quiet; prices unchanged.

GLASGOW, WEDNESDAY.—Market firmer, with small business. No Scotch done; closing with buyers at 39s. 11d. cash, sellers ask 4d. more. Middlesbrough done at 35s. 5d. and 35s 5½d. cash, also at 35s. 7½d. one month; closing with buyers at 35s. 5d. cash, and 35s. 7½d. one month; sellers ask 35s. 5½d. cash and 35s. 8d. one month. Hematite done at 45s. 5d. cash, also at 45s. 8d. one month; closing with buyers at 45s. 5d. cash, sellers ask ½d. more.

THE LIVERPOOL MINERAL MARKET.

The market has ruled firm this week. Manganese: Arrivals are practically nil, whilst sales have been made at advanced figures, and our market is looking still firmer. Borate, 6¼d. per lb.; sulphate, £21. 10s.; oxalate, 1s. 6d. per lb.; chloride, £15.; carbonate, £12. 10s., steady. Magnesite: Raw lump quiet. Raw ground, £6. 10s, and calcined, £12. 10s. Bauxite (Irish Hill brand) continues brisk at full prices—lump, 20s.; seconds, 16s.; and thirds, 12s. French chalk: Arrivals continue small, whilst sales are being fully made at full prices, especially for G.G.B. "Angel White" brand—silvery, 90s. to 92s. 6d.; prime quality, 90s. to 95s.; and superfine, 105s. Barytes:—Carbonate: Prime lump very scarce at 90s. to 95s.; nuts, 70s. to 80s.; whilst finest white sulphate is steady. "Angel White," No. 1, 70s.; No. 2, 60s. to 65s.; No. 3, 45s. Pumicestone steady. Iron ore: Bilbao firmer on account of the strike; Irish and Cumberland unchanged. Santander and manganiferous, there is more doing. Emerystone: Best brands scarce, and in good demand. No. 1 lump, £5. 10s. to £6.; smalls, £5. to £5. 10s. Fullers' earth quiet; best lump, 55s.; fine impalpable ground, £7.; "Emerald" ground, 80s. Scheelite, wolfram, tungstate of soda, and tungsten metal in fair demand; prices firm. Chrome ore of high percentages sought after, both for spot and forward delivery at full figures. Antimony ore and metal have been firmer. Asbestos very firm. Potters' lead ore of best quality quiet; smalls, £12. 10s. to £13. 15s.; selected lump, £14. 10s. to £15. 10s. Calamine little doing. Strontia sulphate (celestine) continues very quiet. Limespar unchanged, especially for English manufactured; old G.G.B. brand in demand at 50s. (ground). Felspar unchanged. Fluorspar: Best quality scarce. Ferro manganese firmer, 75%, £12.; 85%, £13. 15s. Plumbago brisk. Spanish, £5.; best Ceylon lump at last quotations; Italian and Bohemian, £4. to £12. per ton. "Founders," £5. to £6.; Blackwell's "Mineraline," £10. French sand, 20s. to 22s. 6d. Ground mica, £45 to £50. China clay steady; common, 18s. 6d.; good medium, 22s. 6d. to 25s.; best, 30s. to 35s. (at Runcorn). Bog ore (oxide of iron) steady; finest quality, 22s. to 23s.

TYNE CHEMICAL REPORT.

TUESDAY.

In the chemical trade rather more business is doing in caustic soda. With the approach of spring, an improved demand for this product is anticipated. Bleach very firm at £7. 10s. nett. Sulphur still scarce. Chlorate of potash advanced to 6d. per lb. less 6%. Bleaching powder, softs, £7. 10s. per ton, hards, £7. 15s. per ton; caustic soda, 77% £11. 10s. per ton, 70% £10. 5s. per ton; recovered sulphur, in 2 cwt. bags, £6. 5s. to £6. 10s. per ton; soda ash, 48% £5. 8s. 9d. per ton, 52% £5. 17s. 9d. per ton, 56% £6. 6s. 9d. per ton; alkali, 36% £4. 18s. 6d. per ton; white alkali, 48% £6. 10s. per ton, 50% £6. 15s. 6d. per ton, 52% £7. per ton; hyposulphite of soda, £7. per ton in 5-7cwt. casks, £7. 15s. per ton in 1 cwt. kegs in 10 ton lots; silicate of soda, 75° Tw. £2. 13s. 6d. per ton, 100° Tw. £3. 13s. per ton, 140° Tw. £4. 2s. 6d. per ton; soda crystals, in casks, £2. 17s. 6d. per ton gross weight, in 2 cwt. bags £2. 17s. 6d. per ton nett weight, chlorate of potash, 6d. per lb. less 6%; pearl hardening, £3. 10s. per ton; pure white sulphate of alumina, £4. 10s. per ton; blanc fixe, £7. 10s. per ton; chloride of barium, £7. 10s. per ton; nitrate of baryta crystals, £17. per ton; nitrate of baryta crystals, ground, £17. 10s. per ton; sulphide of barium, £7. per ton; carbon of alumina, £38. 10s. per ton; aluminate of soda, £33. 10s. per t hydrate of barium, £11. per ton.

Salt quiet, at 9s. per ton nett f.o.b. Tees.

Coals: Trade continues dull, the strike of the engineers throwin lot of surplus coal on the market. Best Northumbrian steam, 9s. to 10s. per ton f.o.b.; gas coal dull, at 8s. 3d. to 8s. 6d. per t bunker and manufacturing coals are so abundant as to keep prices l Coke steady, at 16s. per ton f.o.b.

There is a chance of the threatened rupture in the Durham coal tr being avoided, if the miners will accept the compromise offered by owners as a final proposition. The proposal is, that, they will ac either a present reduction of 7½ per cent., or an immediate reduc of 5 per cent., with a further reduction of 5 per cent. on the 1st of next.

WEST OF SCOTLAND CHEMICALS.

GLASGOW, TUESDAY

Chemicals generally, in this market, continue disappointingly in with business of a speculative character well nigh faded out of membrance, and as yet not the slightest forecast of the wished-for vival. Prices, if not shoved up artificially, would have suffered ser downcome long ago, but there are no signs of falling, further than be taken from the resale transactions at makers' fixtures slightly sha There is always a limited bulk of these cropping up. Instead of ing, the order of the day tends the other way, so far as the Unio concerned, and chlorate of potash has been lifted a peg. Gradually creasing inroad by foreign makers is a good deal talked of.

Shipments of sulphate of ammonia out of Leith last week ran to tons. There has been no genuine recovery of value (one maker £10. 8s. 9d. last week under special circumstances), and the hig quotable value to-day is still only £10. 7s. 6d. f.o b. Leith, acc panied by the weakest possible condition of market, and oper unanimously complaining.

Owing to the last week's phenomenal cold there has been an looked-for spurt in the call for burning oils; but of the other paraf scale is still rather poorly, and the rest stationary. It is stated that of the oil companies is withdrawing from the Association, and points the wrong way for a maintenance of product values, alre critically low.

Chief prices current are:—Soda crystals, £2. 17s. 6d., nett T alum in lump, £5. 10s., nett Glasgow; soda ash, 1⅜d., less 2 Tyne; caustic soda, white, 74°, £11. 5s., 70/72°, £10. 5s., 60/ £9. 2s. 6d., and cream 60/62°, £8. 17s. 6d., all nett Liverpool; b bonate of soda, 5 cwt. casks, £6. 15s., and 1 cwt. casks, £7. nett T refined alkali, 1⅝d., less 5% Tyne; bleaching powder, £7. 6s. nett Tyne; saltcake, 37s. 6d.; borax, English refined, £29. 10s., boracic acid, £37. 10s., nett Glasgow; bichromate of po 3¾d., less 10% for Scotch and English deliveries (for ex 3½d., less 10% f.o.b. Glasgow); bichromate of soda, 2¾ less 10% for Scotch and English deliveries (for export 2½d., less f.o.b. Glasgow); chlorate of potash, 6d., less 5% any p nitrate of soda, 9s. 6d.; sulphate of ammonia, £10. 7s. 6d. f.o.b. L salammoniac, first and second white, £33. and £35., less 5% port; sulphate of copper, £14. 15s. less 5% Liverpool; paraffin s (hard), 2 15/16d., and soft 2 13/16d. to 3d. per lb.; paraffin wax, 120°, s refined, 3 5/8d. to 4d.; paraffin spirit (naphtha), 7d. a gallon; pa oil (burning) 5d., 5¼d. and 5½d. according to kind, at works. Scotch buyers (English sales about 1d. lower); ditto (lubricat 865°, £4. to £4. 5s., 885°, £5. 5s. to £7., and 890/895°, £6. to Week's imports of raw sugar at Greenock were nil.

New Companies.

GEORGE HEARN AND CO., LIMITED.—This company was registered on th inst., with a capital of £70,000, in £10. shares, to acquire and take over as a concern the business carried on at Hearn-street, Curtain-road, E.C., under th of George Hearn and Co., to adopt the agreement referred to in clause 3 articles, and to carry on the business of candle makers, seed crushers, re wax chandlers, soap makers, etc. The subscribers are —

	Sha
B. Parker, St. Michael's Rectory, Cornhill, E.C., solicitor	
W. Collinson, Hearn-street, Curtain-road, E.C., soap maker	
E. Williams, 3, Finsbury Circus, E.C., solicitor	
H. Smith, Holly Bank, Manor-road, Leyton	
H. C. Newton, 121, Avenue-road, Highbury, N.	
W. Daun, 22, Harcourt-terrace, Kensington	
J. S. Standen, 60, Moray-road, Tollington Park	

RUSHDEN AND HIGHAM FERRERS DISTRICT GAS COMPANY, LIMITED.—company was registered on the 12th inst., with a capital of £10,000., in £5. s to unite and carry on in all their branches the businesses of the Rushden Ga

e Company, Limited, and the Higham Ferrers Gas and Coke Company, ited. The subscribers are :—

	Shares.
G. H. Skinner, Rushden, Northants, butcher	1
G. Skinner, Rushden, retired farmer	1
T. Sanders, Rushden Hill, Higham Ferrers, Northants, farmer	1
J. Spence, Irthlingborough, Northants	1
W. Rodbourne, Rushden	1
C. H. Simpson, Higham Ferrers, solicitor	1
W. B. Sanders, Rushden	1
F. J. Shelton, Higham Ferrers, butcher	1
J. Cabson, Rushden, shoe rivetter	1

ITANIC STEEL COMPANY, LIMITED.—This company was registered on the 13th , with a capital of £12,000., in £5. shares, to acquire and carry on the business echanical and electrical engineers, etc., carried on by Mr. S. J. Hackney under style of the Titanic Steel Company, at Pott-street, New Islington, Manchester, to enter into an agreement with Mr. S. J. Hackney for that purpose. The scribers are :—

	Shares.
W. Nelson, Ancoats Glass Works, Manchester	1
J. Woodward, 4, St. Ann's-square, Manchester, engineer	1
W. Sisson, 49, Shakespeare-street, Manchester	1
S. J. Hackney, New Islington, Manchester, steel founder	1
W. Thomson, 26, Victoria-street, Manchester, solicitor	1
J. Phillips, 15, Teneriffe-street, Higher Broughton, Manchester	1
A. Wade, 23, Cross-street, Manchester, estate agent	1

'ALLSEND AND HEBBURN COAL CO., LIMITED.—This company was registered he 15th inst., with a capital of £175,000., in £100. shares, to enter into the agree- t referred to in clause 3 of the articles (with G. F. Fenwick) for the purchase of hold coal mines and other property in Northumberland and Durham, and to y on the business of colliery proprietors, miners, coke manufacturers, iron- ers, steel makers, engineers, smelters, etc. The subscribers are :—

	Shares.
J. Spencer, Walton Hall, Newcastle, steel maker	1
J. Liddell, Benwell Hall, Newcastle, coal owner	1
C. W. C. Henderson, The Riding, Hexham, coal owner	1
G. B. Forster, North Jesmond, Newcastle, mining engineer	1
J. B. Simpson, Hedgefield House, Blaydon-on-Tyne, engineer	1
J. H. Straker, Corbridge-on-Tyne, coal owner	1
T. E. Forster, North Jesmond, Newcastle, mining engineer	1

The Patent List.

his list is compiled from Official sources in the Manchester Technical oratory, under the immediate supervision of George E. Davis and red R. Davis, who report professionally upon the value of Chemical nts.

APPLICATIONS FOR LETTERS PATENT.

illing Mineral Oils. L. Sepulchre. 2,367. February 8.
nufacture of Refractory and Basic Bricks. Sir A. Hickman. 2,375. February 8.
duction of Neutral Sulphate of Soda and Precipitated Phosphate of Lime. L. Brunner and A. Zanner. 2,389. February 8.
nufacture of New Bases and Colouring Matters Therefrom. C. D. Abel. 2,408. February 8.
aining Alkali-Phosphates from Acid Alkali-Sulphates. J. Wetter. 2,415. February 8.
rovements in Centrifugal Machines. A. J. Boult. 2,431. February 8.
rovements in Digesters for the Manufacture of Paper Pulp. W. Andrew. 2,432. February 8.
Improvements in Artificial Fuel. J. Swallow and C. West. 2,434. Feb. 8.
Improvements in Tube Welding Furnaces. G. Rose. 2,463. February 9.
Improvements in Lubricating Materials. A. Lohmann. 2,482. February 9.
Improvements in Magneto-Electric Machines. J. Hunt. 2,497. Feb. 9.
Improvements in Annealing Metals. S. H. Brown and M. McBarron. 2,498. February 9.
Apparatus for Concentrating or Separating Solids. J. Mays. 2,516. Feb. 9.
Electrical Motors. A. J. Boult. 2,544. February 9.
Improvements in Filter Apparatus. A. J. Boult. 2,551. February 9.
Sewage Purification by Means of Lime in Conjunction with a Salt of Iron. H. Lockwood. 2,560. February 10.
Antifouling Paint. W. L. L. Grant and H. P. T. Dennys. 2,562. February 10.
Improved Substitute for India-rubber. A. F. St. George. 2,563. Feb. 10.
Improved Fuel. W. L. Malcolmson and W. E. Parker 2,578. February 10.
Circulating Water in Steam Boilers. T. Lowe. 2,581. February 10.
Preparing Ores, Oxides, and Compounds of Iron for Smelting. J. Woodcock, J. Smith and W. M. Mackey. 2,583. February 10.
Coating Iron with Various Metals W. K. Greenway. 2,594. February 10.
Improvements in Hydro-Extractor Cages. J. W. Collins and A. Kaye. 2,595. February 10.
Improved Process for the Production of Crystals. J. Morris. 2,604. Feb. 10.
Varnish and Paint Removing Composition. J. Dawson. 2,605. Feb. 10.
Improvements in Electromotors. P. Bary. 2,618. February 10.
Electroplating Organic Substances. A. Le Cocq de Lautrepe. 2,619. February 10.
Utilising Waste Liquors from the Manufacture of Cellulose. V. B. Drewsen. 2,629. February 10.
Ventilating Fans. W. W. Wardle. 2,683. February 11.
Generating Carbon Dioxide and using the same for the purpose of Extinguishing Fires. J. A. Wilson and D. Nicoll. 2,684. February 11.
A Substitute for Acid Tartrate of Potassium. A. MacFarlane. 2,697. February 11.
Production of Black Dyes Suitable for Dyeing Wool. S. Pitt. 2,718. February 11.
Purifying Waste Liquids from Factories. A. J. Boult. 2,719. February 11.
Improvements in Filters. R. Roch-Brault. 2,721. February 11.
Production of Azo Dyes. A. Pitt. 2,789. February 12.
Cooling and Freezing Liquids. J. W. Bowley. 2,790. February 12.
Fire Extinguishing Apparatus. L. Loewenthal. 2,808. February 12.
Improvements in Liquid Hydro-Carbon Engines. H. H. Leigh. 2,854. February 13.
Utilising the Heat of Hot Furnace Slag, etc. W. P. Ingham and J. E. Stead. 2,857. February 13.
Improvements in the Manufacture of Nitrates. C. W. Kriens. 2,878. February 13.

Gazette Notices.

PARTNERSHIPS DISSOLVED.

E. DAWSON AND G. E. EAST, JUNR., Newington Butts, S.E., general electricians.

J. J. TELFORD AND T. BROOKE, under the style of T. Brooke and Co., Bradford, oil merchants.

H. F. RUSHTON AND J. J. IRVING, under the style of Rushton and Co., Liverpool, engineers.

BANKRUPTCY ACTS, 1883 AND 1890.

Receiving Orders.

HERBERT, ALBERT (trading as A. Herbert and Co.), Cardiff, enamelled slate and marble manufacturers.

MADDEN, MICHAEL AND WARD, BENJAMIN (lately trading as Madden and Ward), West Bromwich, late brickmakers.

Adjudication.

LEICESTER, PHILIP, Chudheath Lordship, near Northwich, brick and tile manufacturer.

IMPORTS OF CHEMICAL PRODUCTS

AT

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending February 13th.

etic Acid—		
olland,	20 pks.	Elkan & Co.
state of Lime—		
. S.,	385 pks.	H. Wallace & Co.
tali—		
rance,	210 c.	Arnati & Harrison
rytes—		
ermany,	23 cks.	S. Ward & Co.
olland,	25	C. J. Capes & Co.
elgium,	42	Colthurst & Harding
ermany,	223	T. T. Greed
Holland,	6	R. Baelz & Co.
,,	25	Thames S. T. & L. Co.
Belgium,	56	Magee, Taylor & Co.
Barium Chloride—		
Germany,	23 pks.	Petri Bros.
Boracic Acid—		
Italy,	9 pks.	J. Puddy & Co.
Borate of Lime—		
U. S.,	22 pks.	Burton, Baker & Co.
Brimstone—		
Italy,	10 t.	J. Puddy & Co.
,,	25	G. Boor & Co.
,,	50	Johnson & Hooper
Italy	47	C. J. Capes & Co.
,,	10	P. Ironside
,,	100	Brandram, Bros., & Co.
,,	50	Thames S. T. & L. Co., Ld.
,,	25	J. Kitchen, Ld.
,,	5	F. Smith
,,	200	Fuerst Bros.
,,	5	E. & E. Arbib
China,	1	E. W. Carling & Co.
Bromine—		
Germany,	17 pks.	A. & M. Zimmermann
Caoutchouc—		
Zanzibar,	94 c.	L. & I. D. Jt. Co.
Zanzibar	29	Clarke & Smith
Madagascar,	16	W. M. Smith & Sons
Germany,	200	W. Balchin
Rangoon,	467	L. & I. D. Jt. Co.
Mauritius,	270	Kleinworth, Sons & Co.
France,	16	Lewis & Peat
Madagascar,	24	Procter Bros.
,,	9	Prop. Bull Wf.
,,	55	L. & I. D. Jt. Co.
,,	17	Lewis & Peat
E. I.,	25	E. Barber & Co.
Inhambane,	35	L. & I. D. Jt. Co.
Zanzibar,	29	Hopkins, Ford & Co.
,,	5	Wallace Bros.
Singapore,	150	L. & I. D. Jt. Co.

Chemicals (*otherwise undescribed*)
France, £12 H. Johnson & Sons
,, 5 Fletcher & Co.
Germany, 10 pks. L. & I. D Jt. Co.
,, 21 Phillipps & Graves
Holland, £10 J. Barber & Co.
,, 8 Phillipps & Graves
Germany, 42 pks T. H. Lee
,, 3 C Atkins & Nisbet
,, 10 Craven & Co.
,, 92 A. & M. Zimmermann

Cream of Tartar—
Zanzibar, 125 pks. Thames S. T. & L. Co.
Germany, 40 A & M. Zimmermann
Holland, 8 B. & F. Wf. Co., Ld.
France, 18 W. C. Bacon & Co
,, 1 Smith, Abbott & Co.
,, 12 Bessler, Waechter & Co.
,, 19 B. & F. Wf. Co., Ld.
,, 5 J. Puddy & Co.
Spain, 43 W. C. Bacon & Co.
Holland, 20 N. Smith
,, 5 Middleton & Co.
Spain, 5 B. & F. Wf. Co.
,, 5 Christopherson & Co.
,, 3 Evans, Lescher & Co

Dyestuffs—
Argols
Italy, 369 pks. B. Jacobs & Sons
Cochineal
Canary, 18 W. M. Smith & Son
,, 107 Sperling & Williams
Cutch
Rangoon, 5,940 pks. Arracan & Co.
Singapore, 260 J. Swire & Sons
Extracts
France, 20 pks. T. H. Lee
,, 20 B. & F. Wf. Co , Ld.
Denmark, 8 R. J. Fulwood & Bland
U. S., 100 Skilbeck Bros.
France, 249 L. J. Levinstein & Sons
Austria, 562 A. J. Humphrey
Gambier
China, 168 H. Lambert
Singapore, 171 Evans & Co.
,, 244 Beresford & Co.
,, 1,096 J. Swire & Son
,, 644 R. & J. Henderson
Indigo
E. I., 12 chts. Williams, Torrey & Co.
,, 75 P. & O. Co
,, 3 H. A. Litchfield & Co.
,, 60 Elkan & Co.
,, 129 Arbuthnot, Latham & Co.
,, 14 Ernsthausen & Co.
,, 190 Patry & Pasteur
,, 6 Ralli Bros.
W. I., 5 Lewis & Peat
,, 3 L. & I. D. Jt. Co.
,, 15 Benito, Novello & Co.
E. I., 35 H. Johnson & Sons
,, 170 L. & I. D. Jt. Co.
,, 59 F. W. Heilgers & Co.
Holland, 1 Dipnall & Co.
,, 1 T. H. Lee
Myrabolams
E. I., 400 pks. L. & I. D. Jt. Co.
Orchella
Zanzibar, 44 pks. Gray, Dawes & Co.
,, 44 L. & I. D. Jt. Co.
Saffron
Spain, 1 pk. Price, Hickman & Co.
Sumac
Italy, 50 pks. Beresford & Co.
,, 200 Sollas & Sons
,, 550 J. Kitchin, Ld.
,, 100 W. Shelcott
,, 200 J. E. Scott
Tanners' Bark
Belgium, 43 t. Arnati & Harrison
Turmeric
China, 38 pks. H. A. Litchfield & Co.
,, 38 L. & I. D. Jt. Co.

Farina—
Germany, 10 pks. B. & F. Wf Co., Ld.
Argentine, 1,229 bgs. C. F. Webster & Co.
Germany, 100 pks. J. Anderson & Co.
Holland, 35 J. Knill & Co.

Glucose—
U. S, 650 pks. 950 c. Devitt & Hett
,, 700 760 Barratt, Tagant & Co.
,, 50 275 H. Johnson & Sons
,, 250 500 J. Forsey
,, 150 835 Pillow, Jones & Co.
,, 50 300 Page, Son & East
,, 75 375 Soundy & Sons
,, 20 120 J. Barber & Co.
,, 5,250 6,013 R. G. Hall & Co.
,, 1,015 5,240 L. Sutro & Co.
,, 100 500 Ohlenschlager Bros.
,, 130 783 J. Knill & Co.
,, 359 1,975 Prop. Chmbln's Wf.
,, 50 280 Page, Son & East

Manganese—
Australia, 387 t. Harrold Bros.

Manure—
France, 370 t. J. Burnett & Son
Germany, 20 Odam's Chem. M. Co.
U. S., 727 Cleid, Rottledge & Co.

Ochre—
France, 4 cks. O'Hara & Hoar
Holland, 8 css. Phillipps & Graves
France, 1 ck. Stobbs, Wilson & Pollard

Painters' Colours—
Germany, 2 cks. Craven & Co.
,, 28 pks. L. & I. D. Jt. Co.
,, 10 Phillipps & Graves
,, 4 cks. T. H. Lee
,, 32 pks. T. Hamilton
Holland, 4 Phillipps & Graves
France, 15 Flageollet & Co.
U. S., 10 L. & I. D. Jt. Co.
,, 21 Davies, Turner & Co.
,, 12 H. W. Peabody & Co.
Singapore, 7 L. & I. D. Jt. Co.
Germany, 2 pks. Elkan & Co.
France, 4 1 ck. Bennett S.S. Co
Holland, 1 R. Baelz & Co.

Paraffin Wax—
Germany, 16 css. Grosscurth & Ludbolt
U. S., 1 946 brls. J. H. Usmar & Co.
,, 167 McDougal & Bouthron
,, 350 Mordaunt Bros.

Pearl Ashes—
France, 180 c. Petri Bros.
,, 120 F. W. Berk & Co.

Phosphate Rock—
France, 200 t. Lawe's Mnre. Co
Belgium, 170 London Manure Co., Ld.

Pitch—
Germany, 3 brls. C. B. Leighton
Spain, 62 ,,

Plumbago—
Germany, 135 cks. T. H. Lee
,, 35 css. Prop. Scott's Wf.
Ceylon, 1 brl. R. Steadman
Holland, 67 cks. B. Gallaway
Germany, 123 brls. J. Thredder, Son & Co

Potash—
Holland, 41 c. A. J. Luke & Co.

Potassium Bicarbonate—
Germany, 7 cks. A. & M. Zimmermann

Potassium Bichromate —
Holland, 10 pks. C. S. Lovell

Potassium Carbonate—
France, 200 c. Charles & Fox
,, 4 brls. Spies Bros. & Co.
, 10 c. E. W. Carling & Co.

Potassium Oxymuriate—
Belgium, 30 pks. G. Boor & Co.

Potassium Permanganate—
Germany, 11 pks. Spies Bros. & Co.

Potassium Sulphate—
Germany, 508 pks. Ang.-Contl. G. Works
France, 500 F. W. Berk & Co.

Quicksilver—
Spain, 157 btls. L. & I. D. Jt. Co.
Italy, 150 flsks. H. Bath & Son

Saltpetre—
E. I., 272 bgs. A. Hunter & Co.
Germany, 200 C. Wimble & Co.
E. I, 335 Co.-op Lthrge. As.
,, 193 D. de Pass & Co.

Sodium Acetate—
France, 25 pks. S. F. Waters & Co
Belgium, 8 Magee, Taylor & Co.

Sodium Hyposulphite—
Holland, 26 pks. Taylor, Sommerville & Co.

Sulphuric Acid—
Holland, 30 pks. Barr, Moering & Co.

Tartaric Acid—
Holland, 45 pks. Middleton & Co.
,, 14 N. Smith

Ultramarine—
Holland, 2 cs G. Rahn & Co.
Germany, 6 H. Brooks & Co.
,, 8 cks. G. Steinhoff
Belgium, 16 Magee, Taylor & Co.
,, 7 Leach & Co.

Verdigris—
France, 4 pks. C. Brumlen & Sons

White Lead—
Germany, 46 cks. Randall Bros.
,, 4 Elkan & Co.
,, 3 J. Matton
,, 24 D. Storer & Sons, Ld.
,, 83 Magee, Taylor & Co.
,, 28 W. Croft
Belgium, 40 T. & W. Farnilloe
Germany, 10 S. H. Wilkinghby
,, 23 W. A. Rose & Co.
France, 45 W. Harrison & Co.

Zinc Oxide—
Germany, 40 cks. J. Matton
U. S, 100 brls M. Ashby, Ld.
Holland, 500 cks. Soundy & Sons

LIVERPOOL.

Period ending February 17th.

Acid—
Leghorn, 16 cks. Shrops. Union Co.
,, 91
Barytes—
Antwerp, 50 bgs. J. T. Fletcher & Co.
,, 11 cks.
In transit, 182
Borate—
Valparaiso, 498 bgs.
Caustic Potash—
Dunkirk, 5 dms.
Chemicals (*otherwise undescribed*)
Rotterdam, 5 cks.
Cream of Tartar—
Barcelona, 5 cks.
Dyestuffs—
Extracts
Colon, 100 cs. Rylands & Sons
Madder
Marseilles, 17 brls.
Myrabolams
Bombay, 7,043 bgs. D. Sassoon & Co.
,, 800
,, 400 A. Salmon & Co.
,, 150 Forbes, Forbes & Co.
Sumac
Palermo, 1,110 bgs. 350 brls.
Turmeric
Bombay, 566 bgs.
Valonia
Patras, 2 bgs. C. C. Papayanni & Jeremias
Sydney, 350 C. G. Nicolaidis
,, 250 Papayanni & Jeremias
,, 420

Glucose—
New York, 40 brls.
Rotterdam, 40 flkns.
Philadelphia, 50
Iodine—
Valparaiso, 59 brls. A. Gibbs
,, 30 W. & J. L
Ochre—
Marseilles, 30 brls.
Phosphate—
Ghent, 50 t.
Pitch—
Marseilles, 131 brls.
Dunkirk, 30 cks.
Marseilles, 61 Foth. Hill
Potash—
Dunkirk, 9 cks.
Pyrites—
Huelva, 951 t. Mathe.on
Quicksilver—
Gijon, 250 flsks. J. Bott
Saltpetre—
Hamburg, 50 cks.
Silicious Earth—
Hamburg, 200 bgs.
Soap—
Marseilles, 8 cs.
Leghorn, 400 bxs. Brown Bros.
,, 500 Weaver &
Naples, 94 css. Paul Be
,, 166 A Allvery
Soapstone—
Genoa, 500 bgs. Harrison
,, 508 G. G. Blac
Sodium Sulphate—
Boston, 5 brls. Fraser
Stearine—
New York, 20 hds.
Antwerp, 20 bgs.
Sulphur Ore—
Huelva, 1,407 t
Tartar Emetic—
Hamburg, 4 cks.
Ultramarine—
Rotterdam, 17 css.
Hamburg, 20 cks.
Vaseline—
New York, 100 cs. Cheesebrough M facturin
Verdigris
Bordeaux, 5 cks.
Waste Salt—
Hamburg, 700 bgs.
White Lead—
Rotterdam, 41 cks.
Zinc Oxide—
Antwerp, 50 brls.
Zinc Sulphate –
Hamburg, 32 cks.

GLASGOW.

Week ending February 18th

Barytes Sulphate—
Antwerp, 150 bgs.
Chemicals (*otherwise undescri*
Rotterdam, 1 css. J. Rankine &
Hamburg, 1
Copper Pyrites—
Huelva, 3,330 t. Tharsis
Dyestuffs—
Alizarine
Rotterdam, 48 cks.
,, 45 J. Rankine &
Glucose—
Rotterdam, 30 pks J. Rankine &
Guano—
Freybentos, 5,831 bgs.

Horn Piths—
Freybentos, 4½ t.
Painters' Colours—
Antwerp, 7 cks.
Phosphate Rock—
Antwerp, 1,740 bgs.
Varnish—
New York, 100 brls.
White Lead—
Rotterdam, 52 cks. J. Rankine & Son
Zinc Oxide—
Antwerp, 50 cks.
Zinc White—
Rotterdam, 10 cks. J. Rankine & Son

HULL.

Week ending February 11th.

Acid—
Rotterdam, 8 btls. Hutchinson & Son
Alkali—
Flushing, 1 ck. Zeeland S.S. Co.
Barytes—
Rotterdam, 23 cks. Hanger, Watson & Harris
,, 23 Lawson & Sons
Antwerp, 24 Bailey & Leetham
,, 22 T. F. Chambers & Co.
Bremen, 45 Tudor & Sons
,, 45 Blundell, Spence & Co.
,, 60
Caoutchouc—
Hamburg, 1 bl. Bailey & Leetham
,, 1 Veltmann & Co.
Cellulose—
Flushing, 5 css. Zeeland S.S. Co.
Chemicals (*otherwise unaescribed*)
Dunkirk, 60 pks. Wilson, Sons & Co.
Hamburg, 4 ,,
Bremen, 3 cs. Veltmann & Co.
Cream of Tartar—
Rotterdam, 2 Hutchinson & Son
Dyestuffs (*otherwise undescribed*)
Hamburg, 125 brls. Wilson, Sons & Co.
Dyestuffs—
Alizarine
Rotterdam, 15 brls. Lawson & Son
,, 38
,, 23 cks. Hutchinson & Son
,, 44 25 pks. 3 css. W. & C. L. Ringrose
Indigo
Amsterdam, 1 chst. W. & C. L. Ringrose
Farina—
Ghent, 220 cs. Wilson, Sons & Co.
Harlingen, 20 bgs.
Glucose—
New York, 200 brls.
Manure—
Amsterdam, 100 bgs. Hirschfeld Bros.
Ochre—
Marseilles, 50 cks. Wilson, Sons & Co.
Pitch—
Dunkirk, 16 cks.
Rotterdam, 55 H. F Pudsey
Plumbago—
Bremen, 4 cks. Veltmann & Co.
,, 12 Johnson & Co.
Stearine—
Marseilles, 138 bgs. Wilson, Sons & Co.
Vaseline—
New York, 15 cs Wilson, Sons & Co.
White Lead—
Rotterdam, 63 cks. Sissons Bros & Co.

TYNE.

Week ending February 13th.

Alum Earth—
Hamburg, 17 cks. Tyne S.S. Co.
Cryolite—
Copenhagen, 47 cks.
Phosphate Rock—
Fernandiva, 1,142 t. Langdale's Chemi. Manure Co.
Sulphur Ore—
Pomaron, 1,250 t.
Pernaven, 1,175 Mason & Barry
Pomaron, 997 ,,
Zinc Oxide—
Antwerp, 15 brls. Tyne S.S. Co.

GOOLE.

Week ending February 3rd.

Caoutchouc—
Boulogne, 10 cks.
Chemicals (*otherwise undescribed.*)
Rotterdam, 1 ck.
Copper Pyrites—
Huelva, 970 t.
Dyestuffs—
Alizarine
Rotterdam, 144 cks.
Extracts
Rotterdam, 10 cks.
Logwood
Jamaica, 304 t.
Farina—
Hamburg, 200 bgs.
Glucose—
Calais, 360 bgs.
Potash—
Rotterdam, 71 cks.
Dunkirk, 31 21 dms.
Calais, 20 brls. 41
Potassium Muriate—
Rotterdam, 9 cks.
Rosin—
Brunswick, 3,849 brls.
Saltpetre—
Hamburg, 6 cks. 50 bgs.
Rotterdam, 200
Antwerp, 68

GRIMSBY.

Week ending February 6th.

Chemicals (*otherwise undescribed*)
Hamburg, 5 pks.
Dyestuffs—
Indigo
Rotterdam, 15 pks.
Farina—
Hamburg, 100 pks.
Soda—
Rotterdam, 8 pks.
Zinc Ashes—
Antwerp, 9 cks.

EXPORTS OF CHEMICAL PRODUCTS

OF

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending February 17th.

Acids—
Rio de Janeiro, 27 pks. £39
Acetic Acid—
Lisbon, 19 c. £12
Calcutta, 5 21
Thursday Id. 4 8
Alkali—
Perth, 1 t. 13 c. £6
Kurrachee, 2 1
Madeira, 1 3
Alum—
Bourgas, 1 t. 10 c. 9
Aluminous Cake—
Calcutta, 41 t. £133
Ammonia—
Bombay, 15 css. £55
Sydney, 20 18
Yokohama, 8 c. 19
Gothenburg, 20 drs. 40
B. Ayres, 20 13 47
Ammonium Carbonate—
Adelaide, 5 c. £12
M. Video, 11 22
Odessa, 17 t. 2 473
Ammonium Chloride—
Adelaide, 3 c. £23
Cologne, 8 cks. 37
Ammonium Nitrate—
Bushire, 18 c. £78
Ammonium Sulphate—
Ghent, 50 t. 525
Philadelphia, 50 541
Hamburg, 10 5 c. 122
Rouen, 10 105
Antwerp, 100 1,010
Arsenic—
Sydney, 2 t. £25
Barytes Nitrate—
New York, 3 t. 1 c. £59
Barytes Sulphate—
Leghorn, 20 cks. £31
Bleaching Powder—
Townsville, 4 t. £37
Borax—
Sydney, 6 c. £9
Genoa, 18 70
Brimstone—
Calcutta, 106 t. £848
Caustic Potash—
Calcutta, 3 c. £8
Caustic Soda—
Natal, 9 c. £13
Savanilla, 2 t. 16 33
Sydney, 7 13
Cape Town, 2 4
Townsville, 14 27
Brisbane, 1 2 17
Odessa, 60 5 635
Maradu, 51 10 521
Patras, 8 12 94
Carbolic Acid—
Genoa, 18 pks. £37
Rotterdam, 40 cks. 80
Cologne, 13 t. 12 c. 508
Carbolic Acid Crystals—
Rotterdam, 40 cks. £195
Dusseldorf, 160 1,120
Treport, 40 cans 45
New York, 1 t. 15 c. 70
Chemicals (*otherwise undescribed*)
Natal, 8 pks. £23
Sydney, 22 kgs. 6 css. 52
Colombo, 4 cks. 14
Calcutta, 27 pks. 42 235
Adelaide, 55 pks. 10 kgs. 17 css. 200 drms. 451
Mollendo, 5 pks 18
Bombay, 5 css. 75
Fremantle, 10 kgs. 25
Citric Acid—
Hamburg, 10 c. 2 cks. £146
Melbourne, 20 kgs. 92
Rotterdam, 7 52
Brussels, 5 36
Reval, 2 16
Lisbon, 13 93
Barcelona, 1 t. 152
Bombay, 7 cs. 32
Valparaiso, 1 8
Fremantle, 1 c. 8
Thursday Id. 1 5
Coal Products (*otherwise undes.*)
Hong Kong, 10 brls. £12
Sydney, 200 drs. 41
Malta, 20 brls. 20
Aniline
Melbourne, 1 cs. £29
Calcutta, 1 13
Aniline Oil
Barcelona, 12 rnlts. £160
New York, 12 drs. 450
Aniline Salts
Barcelona, 20 rlts. £140
New York, 10 pks. 150
Anthracene
Dusseldorf, 575 cks. £3,943
Benzol
Rotterdam, 80 cks. 20 puns. 34 drs. 1,765
Coal Tar Dyes
Boston, 4 cks. £52
Creosote
Boulogne, 2 drs. 3 cs. £50
Creosote Oil
Treport, 30 brls. £85
Paraffin Wax
Fremantle, 20 cs. £92
Pitch
Caen, 475 t. £784
Dunkirk, 400 660
Calcutta, 350 rlts. 172
Madras, 100 51
Christiania, 60 firkins 7
Philadelphia, 250 cks. 135
Bombay, 50 brls. 18
St. Nazaire, 94 t. 200
Cette, 1,250 2,238
Alexandria, 200 brls. 67
Boston, 800 cks. 428
Falklands, 10 9
Tar
Hong Kong, 16 cks. £15
Wellington, 35 drs. 12
New Orleans, 3,000 brls. 1,588
Calcutta, 30 rnlts., 74 701 pks. 466
New York, 250 cks. 150
Madras, 99 rnlt. £55
Melbourne, 24
Tar Oil
Galveston, 3,000 brls. £1,363
Treport, 26 cks. 370
New York, 100 49
Toluol
Rotterdam, 25 cks. 25 rnlts. £141
Copperas—
Varna, 45 brls. £18
Bourgas, 3 t. 12 c. 8
Copper Sulphate—
Calcutta, 10 t. £150
Antwerp, 10 6 c. 155
Madeira, 11 9
Bombay, 2 10 36
Bordeaux, 36 500
Odessa, 4 19 69
Paris, 10 2 150
Cream of Tartar—
Adelaide, 2 t. £199
Melbourne, 1 94
Launceston, 10 c. 48
Fremantle, 4 22
Sydney, 4 396
Hobart, 7 56
Townsville, 3 15
Cream of Tartar and Tartaric Acid—
Hobart, 12 css. £33
Napier, 5 kgs. 26

Disinfectant—
Calcutta, 10 pks. £25
Sydney, 6 12 css. 47
Melbourne, 320 5 cks. 509
Bombay, 4 css. 50
Kingston, 9 2 cks. 19
New York, 2 css. 23

Manure—
Kingston, 19 t. 3 c. £214
Jersey, 30 240
Cullera, 572 10 4,584
Oporto, 11 10 150
Kingston (Jam.), 5 t. 60
Harlingen, 35 140
Malaga, 67 9 540
Ostend, 25 275
St. Kitts, 6 19 44
Malaga, 38 11 312
Barbadoes, 10 100
Dominica, 7 65
Ostend, 25 275
Bordeaux, 119 10 630
Rouen, 168 1,140
Genoa, 205 1,320
Hamburg, 5 55
Treport, 40 220
Rotterdam, 72 10 730

Bichloride of Mercury
Rotterdam, 2 cks. £35

Mirbane—
Sydney, 10 css. £48
Hamburg, 11 pks. 5 43
New York, 2 drs. 75
Calais, 35 61
Brussels, 11 16

Nitric Acid—
Melbourne, 20 cs. £26

Pearl Ash—
Kingston, 15 c. £9

Phosphorus—
Sydney, 12 css. £74
Melbourne, 12 74
Lisbon, 2 14

Potash—
Alexandria, 22 kgs. 1 t. £86
Rosario, 1 ck. 12

Potash Crystals—
Melbourne, 1 t. 3 c. £60

Potash Salts—
Natal, 14 t. 10 c. £1,884

Potassium—
Townsville, 3 c. £6

Potassium Chlorate—
Calcutta, 2 css. £7
Melbourne, 10 c. 24

Potassium Cyanide—
Natal, 1 css. £12

Salammoniac—
Varnu, 9 c. £14
Constantinople, 2 t. 10 79
Odessa, 1 t. 3 38
Bussorah, 17 cks. 56
Salonica, 8 66
Gothenburg, 1 t. 2 c. 36
Bourgas, 12 19
Samsoun, 10 16
Mersyne, 6 10

Salt Cake—
Ghent, 112 t. £192

Saltpetre—
Brisbane, 10 c. £11
Martinique, 102 t. 18 1,882
Sydney, 2 45
Nelson, 15 17
Antwerp, 10 cks. 30
Alexandria, 10 c. 275
Rosario, 4 19 110

Sheep Dip—
Sydney, 203 cs. £300
San Francisco, 14 t. 18 c. 370
Falklands, 100 drs. 80 pks. 536
Launceston, 1 t. 16 c. 77 pks. 72
Calcutta, 225 drs. 30
E. London, 3 13 c. 100
B. Ayres, 1,750 css. 5,250
Monte Video, 150 450

Soda—
Calcutta, 1 t. 11 c. £13
Port Said, 1 4
Huelva, 1 10 6
Barbadoes, 5 1

Soda Ash—
Fremantle, 5 t. 7 c. £35

Soda Crystals—
Gibraltar, 2 t. £7
Rangoon, 3 c. 1
Fremantle, 2 18 4 cks. 16
Bremen, 1 12 6
Barbadoes, 1 7 5
Trinidad, 3

Soda Salts—
New York, 2 t. 3 £21

Sodium Acetate—
Sydney, 5 t. £92

Sodium Bicarbonate—
Montego Bay, 10 c. £4
Rockhampton, 2 t. 15
Brisbane, 2 t. 15
Nelson, 2 18
Demerara, 1 8
Barbadoes, 10 2
Antigua, 5 1
Hobart, 5 5
Sydney, 5 2
Halifax, 1 2

Sodium Carbonate—
Dunedin, 2 t. £13

Sodium Nitrate—
S. Vincent, 25 t. 8 c. £238

Sodium Silicate—
Calcutta. 1 t. £13
Fremantle, 1 11 c. 7

Sodium Sulphate—
Rosario, 9 c. £2
Ghent, 50 t. 75

Strontium Nitrate—
New York, 7 t. 14 c. £202

Sulphur—
Calcutta, 30 t. £248

Sulphuric Acid—
Madras, 7 t. £35
Kingston, 1 10 c. 20
Natal, 50 css. 18 drs. 73
Aden, 10 10

Superphosphate—
Oporto, 2 t. 10 c. £39

Superphosphate of Lime—
S. Vincent, 10 t. £38

Tartaric Acid—
Lisbon, 6 c. £34
Calcutta, 5 css. 33
Melbourne, 1 t. 20 kgs. 223
Adelaide, 5 c. 20 css. 159
Nelson, 3 16
Hobart, 2 14
Wellington, 7 52
Rosario, 20 brls. 329
Townsville, 1 5
Dunedin, 2 12
Sydney, 5 29
Havre, 2 30

Tartrate of Potash—
B. Ayres, 1 cs. £11

LIVERPOOL.

Week ending February 17th.

Alum—
Bombay, 7 t. 11 c. £44
Dede Agatch, 1 19 10
Santander, 2 12
Alexandretta, 7 10 45
Beyrout, 6 36
Galatz, 3 8 21

Alum Cake—
Madras, 10 t. 2 c. £29
Dunedin, 4 4 1 q. 10
Calcutta, 22 9 1 79
Bombay, 16 brls. 10

Ammonium Carbonate—
Genoa, 3 t. 15 c. £123
Rotterdam, 1 31
New York, 6 15 2 q. 209

Ammonium Chloride—
Antwerp, 5 c. 1 q. £6
B. Ayres, 2 t. 8 54

Ammonium Sulphate—
Antwerp, 15 t. £182
Malaga, 50 14 1 q. 550
New York, 24 19 1 275
Nantes, 55 12 611
Genoa, 10 4 3 108
Gd. Canary, 20 11 2 218
Rouen, 5 50
Bordeaux, 5 55
Valencia, 216 4 3 2,489

Barytes Sulphate—
Para, 4 t. 10 c. 3 q. £18

Bleaching Powder—
Baltimore, 178 cks.
Bombay, 57 css.
Boston, 700
Genoa, 55
Ghent, 55
New York, 466
Philadelphia, 101
Piræus, 2
Alicante, 20
Corunna, 6
Havana, 20
Trieste, 9

Borax—
Piræus, 3 c. 3 q. £6
Antwerp, 19 2 30
Rosario, 1 t. 10 45
St. John's(N. B.), 4 3 7
Santander, 1 2 3 34
Havana, 1 7 39

Boracic Acid—
Yokohama, 1 t. £37

Brimstone—
Barbadoes, 34 t. 1 c. £207
Calcutta, 167 brls. 158
Pelotas, 13 2 q. 5
Havana, 1 3 9
Boston, 1,941 bgs. 1,510

Calcium Chloride—
New York, 3 t. 19 c. £19

Carbolic Acid—
Trieste, 2 t. 9 c. 1 q. £125
Bordeaux, 9 3 19
Rio de Janeiro, 4 5
New Orleans, 10 10

Caustic Potash—
Algoa Bay, 10 c. £18
Antwerp, 2 t. 3 44
Boston, 3 13 74

Caustic Soda—
Amsterdam, 14 dms. 15 kgs.
Barcelona, 6 112 cks.
Barranquilla, 20
Batoum, 32
Bombay, 94
Boston, 152
Buffalo, 25
Calcutta, 107
Cartagena (N.G.), 10 dms.
Galatz, 235
Genoa, 174
Hamburg, 2 brls.
Madrid, 50
Marseilles, 18
Messina, 95
M. Video, 35
Naples, 136
Puerto Cabello, 10
Rangoon, 18
Rio Grande do Sul, 5
Rotterdam, 36
Salonica, 7
Santos, 45
Seville, 100
Algoa Bay, 20
Antwerp, 18
Bahia, 40 kgs.
Caceres, 5
Iquique, 250
Nantes, 130
New York, 87 100 20 cks.
Palermo, 10
Porto Alegre, 10
San Francisco, 10 bxs.
Valencia, 32
Valparaiso, 50
Vigo, 8
Yokohama, 520

Chemicals *(otherwise undescribed)*
Hamburg, 1 t. 10 c. £51
Bombay, 6 18 200
Oporto, 1 35
Odessa, 1 35

Copperas—
Savanilla, 3 t. 8 c. £8
Alexandretta, 5 12 3 q. 12
Ibrail, 2 6
Piræus, 50 brls. 12
San Francisco, 200 57
Smyrna, 25 8
Trebizonde, 12 5

Copper Sulphate—
Odessa, 2 t. 12 c. £37
Barcelona, 4 12 65
Genoa, 11 10 169
Leghorn, 6 1 2 q. 91
Marseilles, 15 13 214
Naples, 1 2 15
B. Ayres, 2 8 2 33
Tarragona, 1 19 2 30
Vera Cruz, 10 160
Valparaiso, 10 9 158
Rouen, 143 15 2,136
Ghent, 2 28
Bordeaux, 218 3,399
Nantes, 95 4 1 1,505
Venice, 9 3 2 415
Oran, 4 19 74

Disinfectants—
Bombay, 13 t. 18 c.

Epsom Salts—
Rio de Janeiro, 30 brls. 120 kgs.

Guano—
Gd. Canary, 2 t. 5 c. 2 q.

Gypsum—
Antwerp, 2 t.
Barbadoes, 25 17 c. 3 q.
New York, 51 8

Manure—
Valencia, 6 t. 7 c.
Las Palmas, 10
Teneriffe, 1

Nitric Acid—
Taltal, 1 c.
Rio de Janeiro, 9 2 q.

Phosphorus—
M. Video, 2 css.
B. Ayres, 4 c.

Potash—
Rosario, 13 c. 2 q.

Potassium Bichromate—
Adelaide, 8 c.

Potassium Chlorate—
B. Ayres, 5 c. 3 q.
Hong Kong, 4 t.
M. Video, 5 3
Naples, 1
Boston, 5
Genoa, 2 15
Hiogo, 4 c
Yokohama, 37 10
Gothenburg, 10
New York, 22 6
Rotterdam, 14

Potassium Prussiate—
Genoa, 1 brl.

Salammoniac—
Trieste, 1 t. 2 c. 2 q.
Palermo, 10
Alexandretta, 1
Constantinople 9
Leghorn, 11

Salt—
Antwerp, 50 t.
Baltimore, 780
Boston, 570
Calcutta, 2,370
Cape Town, 100
Hamburg, 30
Manaos, 33
Newport News, 300
Para, 50
Rotterdam, 269
Saltpond, 25
Valparaiso, 16 7 c.
Brass, 50
B. Ayres, 50
Chicago, 130
E. London, 18
Fredricia, 134
Gd. Bassa, 20
Halifax, 500
Loango, 8
Monrovia, 5
Newcastle, 75
Opobo, 10
Tabon, 5

Saltcake—
Philadelphia, 76 t. 3 c.
Baltimore, 257 13

Saltpetre—
Bilbao, 1 t. 2 c. 2 q.
Pernambuco, 3 16 3

Sheep Dip—
B. Ayres, 376 css. 3,630 drs. £1

Soap—
Abonnema, 100 bxs.
Algoa Bay, 620 25 css.
Barbadoes, 1,100 1
Brussels, 1,200
Curacao, 238
Genoa, 310
Hamburg, 173
New York, 50 49
Rotterdam, 250
Toronto, 400
Valparaiso, 700 28
Accra, 100
Elmina, 20
Gibraltar, 385
Jamaica, 25
Jersey, 10
Kingston (Jam.), 200
Kurrachee, 500
Lanzarote, 25
Leghorn, 50
Lucia, 50
New Orleans, 200
Paris, 25
Pt. Natal, 797
San Fernando, 409

Shanghai, 4,000
Sierra Leone, 237
Singapore, 1,350 1
Addah, 50
Alexandria, 24
Anamaboe, 30
Antwerp, 5
Assinee, 27
Bangkok, 500
Bathurst, 71
Beira, 50
Bombay, 14
Buguma, 50
C. C. Castle, 100
Cape Town, 2,045
Coquimbo, 2
Durban, 50
E. London, 758
Sydney, 116
Teneriffe, 70
Trinidad, 500

Soda Alkali—
Galatz, 2c brls.
Melbourne, 60
Naples, 40
Sydney, 30

Soda Ash—
Adelaide, 154 brls. 34 cks.
Baltimore, 287
Boston, 400 bgs. 140 69 tcs.
Callao, 15
Melbourne, 157 14
M. Video, 25
New York, 334 748
Philadelphia, 102
Rio de Janeiro, 95
Salonica, 100
Sydney, 67 14
Talcahuano, 30
Boston, 1,384 bgs. 140 193
Halifax, 200
Madeira, 7
Napance, 12
Sherbrook,96
Syra, 100
Vigo, 2

Soda Crystals—
Halifax, 25 brls.
Pernambuco, 150
Boston, 280
Calcutta, 20 50 kgs.
Gibraltar, 25
Hong Kong, 50 cks.
Malta, 50
San Francisco, 500

Sodium Biborate—
Rotterdam, 1 t. 1 c. £31
Antwerp, 15 14 2 q. 472
Hamburg, 4 19 3 150
Havre, 5 150

Sodium Bicarbonate—
Adelaide, 170 kgs.
Ancona, 40 6 cks.
Bari, 125
Bordeaux, 70
B. Ayres, 50 70
Cienfuegos, 60
Fiume, 80
Ghent, 20
Halifax, 100
Hamburg, 30 10 brls.
Launceston, 80
Lisbon, 50
Odessa, 70
Porto Alegre, 20
Rotterdam, 20
Sydney, 30
Venice, 100
Marseilles, 60
Melbourne, 108 16
Yokohama, 1,000

Sodium Bichromate—
Syra, 7 c. £9

Sodium Chlorate—
Hamburg, 1 t. 10 c. £91
Yokohama, 2 10 250
Antwerp, 1 59

Sodium Nitrate—
Malaga, 20 t. 1 c. 2 q. £198
Las Palmas, 17 10 165
Seville, 3 1 3 30

Sodium Silicate—
Bombay, 10 cks.
Calcutta, 8 brls.
Genoa, 4
Havre, 21
La Guayra, 10
Madrid, 100 brls.
Malaga, 21 cks.

Sulphur—
B. Ayres, 5 t. £40
Calcutta, 7 12 c. 52
Portland, 3 3 1 q. 28

Superphosphate—
Valencia, 50 t. c. 1 q £145

GLASGOW.

Week ending February 18th.

Ammonia—
Hong Kong, 4 c. £38

Ammonium Sulphate—
Barbadoes, 10 t. 5¼ c. £150
Java, 70 18 £60
Trinidad, 5 60
Demerara, 236 19¼ 2,838

Benzol—
Rotterdam, 22 dms. £235

Bleaching Powder—
Sydney, 99 c. £40
Brisbane, 63 t. 19½ 593
Melbourne,7¼ 50
Calcutta, 7 12 71

Coal Tar—
Madras, 34 t. 2 c. £81

Coal Tar Pitch—
Bordeaux, 254 t. £317

Dyestuffs *(otherwise undescribed)*
Sydney, 44 c. £27
Melbourne, 106¾ £54 19s.
Lisbon, 16 t. 15½ 132

Epsom Salts—
Melbourne, 5¾ t. £24 10s.

Manure—
Trinidad, 250 t. 2¾ c. £1,758
Demerara, 135 15¼ 1,258

Painters' Colours—
Cape Colony, £60
Natal, 26
Melbourne, 231
Calcutta, 27
Madras, 59 c. 30
Chili, 89¼ 60

Paraffin Wax—
Cape Colony, 83¾ c. £155
Melbourne, 21 t. 12 c. 660

Phosphoric Acid—
Trinidad, 1 t. 15¾ c. £29

Pitch—
Chili, 45 t. 16½ c. £78

Potassium Bichromate—
Antwerp, 22 t. 4 c. £665
Rotterdam, 15 cks. 189
Rouen, 165 6¼ 5,955
Lisbon, 27 80
Genoa, 11 3 320

Potassium Prussiate—
Rouen, 5 t. 7¾ c. £297

Salt—
Chili, 3 t. 17¾ c. £36

Salt Cake—
Antwerp, 256 t. 13 c. £510

Soap—
Barbadoes, 6 t. 9¾ £115
Chili, 29 35

Soda Ash—
Philadelphia, 3020 c. £872

Sodium Arseniate—
Lisbon, 36 c. £25

Sodium Bichromate—
Genoa, 12 t. 11¼ c. £290

Stannous Chloride—
Trinidad, £63

Sulphur—
Trinidad, 4 t. 8¼ c. £31 16s.

Sulphuric Acid—
Trinidad, 8 t. 14 c. £50
Demerara, 7 1¾ 20 lbs. 50
Madras, 9 17 82

Yarnish—
Sydney, £35 10s.

White Lead—
Cape Colony, 4 t. 11½ c. £73
Sydney, 30
Brisbane, 16 5 330

HULL.

Week ending February 9th.

Bleaching Powder—
Gothenburg, 2 cks.

Borax—
Amsterdam, 4 cks.

Caustic Soda—
Antwerp, 49 dms.
Gothenburg, 19
Libau, 40
Naples, 25
Trieste, 23

Chemicals *(otherwise undescribed)*
Antwerp, 3 cks. 30 cs. 3 pks.
Bergen, 2
Christiania, 4 971 slabs.
Dunkirk, 20
Gothenburg, 26 6 pks.
Genoa, 7
Hamburg, 157 2
Harlingen, 36
Libau, 16
Messina, 14
New York, 400 100
Naples, 6
Reval, 1
Rotterdam, 2 72
Stettin, 11 2 12
Trieste, 19

Copper Sulphate—
Genoa, 33 cks.
Leghorn, 38
Naples, 26

Cotton Seed Oil—
Amsterdam, 100 c.
Antwerp, 467
Bremen, 34
Dunkirk, 100
Flushing, 505
Fiume, 101
Gothenburg, 150
Hamburg, 2,251
Leghorn, 205
Rotterdam, 2,236
Trieste, 1,775

Dyestuffs *(otherwise undescribed)*
Drontheim, 1 css.
Ijmuiden, 1 ck.
Hamburg, 3 dms.
Reval, 14 bgs.
Rotterdam, 1

Linseed Oil—
Antwerp, 7 c.
Bergen, 120
Christiania, 154
Christiansand, 88
Drontheim, 77
Genoa, 34
Hamburg, 207
Rotterdam, 34
Stavanger, 17

Manure—
Antwerp, 1,787 bgs.
Dunkirk, 1,127
Ghent, 600
Rouen, 250
Rotterdam, 200

Painters' Colours—
Antwerp, 1 ck. 128 pks. 2 cs.
Christiania, 2
Drontheim, 32
Ghent, 11
Gothenburg, 3 1
Hamburg, 12
Leghorn, 10
Marseilles, 3
New York, 49
Palermo, 4
Reval, 16
Rouen, 15
Rotterdam, 5
Stettin, 8

Pitch—
Antwerp, 226 t.
Catania, 62 cks.
Dunkirk, 61

Soap—
Stettin, 2 css.

Yarnish—
Amsterdam, 3 cks.
Ghent, 4 css.
Rotterdam, 1

TYNE.

Week ending February 13th.

Acids—
Antwerp, 22 c.

Alkali—
Christiania, 106 c.
Rotterdam, 43
Bergen, 59
Antwerp, 99

Ammonia—
Barcelona, 551 c.

Arsenic—
Barcelona, 22 c.

Barytes—
Antwerp, 200 c.

Bleaching Powder—
Copenhagen, 25 c.
Rotterdam, 851
Odessa, 405
Gothenburg, 113
Antwerp, 1,664

Caustic Soda—
Arendal, 24 c.
Philadelphia, 2,473
Barcelona, 3,014
Copenhagen, 78
Gothenburg, 99
Hamburg, 3 . 21 s.

Copper Sulphate—
Barcelona, 202 c.

Ferro Manganese—
Arendal, 2 c

Litharge—
Hamburg, 85 c.
Stavanger, 5
Gothenburg, 11

Magnesia—
Hamburg, 11 c.
Barcelona, 110

Ochre—
Copenhagen, 9 c.

Painters' Colours—
Gothenburg, 6 c.
Hamburg, 16

Phosphorus—
Barcelona, 154 c.

Salt—
Antwerp, 1 q. 2 lb

Soda—
Rotterdam, 25 c.
Gothenburg, 105
Hamburg, 2

Soda Ash—
Christiania, 246 c.
Copenhagen, 394
Gothenburg, 1,000
Antwerp, 67

Soda Crystals—
Antwerp, 42 c.
Esbjerg, 120
Philadelphia, 2,000

Sodium Hyposulphite—
Bremen, 502 c.

Sodium Nitrate—
Odessa, 55 c.

Sodium Silicate—
Barcelona, 633 c.

Sulphur—
Christiania, 800 c.
Gothenburg, 1,500
Hamburg, 4,000

Superphosphate—
Bremerhaven, 3,903 c.

White Lead—
Stavanger, 12 c.
Odessa, 60

GOOLE.

Week ending February 3rd.

Benzol—
Rotterdam, 58 cks.

Bleaching Powder—
Ghent, 15 cks.
Rotterdam, 24

Chemicals *(otherwise undescribed)*
Rotterdam, 59 cks.

Coal Products—
Rotterdam, 9 cks.

Creosote Oil—
Oporto, 1,044 cks.

Dyestuffs *(otherwise undescribed)*
Antwerp, 3 cks. 3 pks.
Boulogne, 3
Dunkirk, 18
Ghent, 13 dms.

Manure—
Boulogne, 45 bgs.
Bruges, 287
Dunkirk, 320
Ghent, 379
Ostend, 1,076

Pitch—
Antwerp, 362 t.

GRIMSBY.

Week ending February 6th.

Chemicals *(otherwise undescribed)*
Antwerp, 2 cks.
Dieppe, 2 cs 110 pks.
Hamburg, 2 24 dms.
Rotterdam, 23

Dyestuffs *(otherwise undescribed)*
Dieppe, cks.

PRICES CURRENT.

WEDNESDAY, FEBBUARY 24, 1892.

PREPARED BY HIGGINBOTTOM AND CO., 116, PORTLAND STREET, MANCHESTER.

The values stated are F.O.R. *at maker's works, or at usual ports of shipment in U.K. The price in different localities may vary.*

	£	s.	d.
Acids:—			
Acetic, 25 %, and 40 % .. .. per cwt.	7/- & 11/-		
,, Glacial .. .. ,,	50/-		
Arsenic, S.G., 2000° .. .. ,,	0	13	6
Fluoric .. .. per lb.	0	0	3¼
Muriatic (Tower Salts), 30° Tw. .. .. .. per bottle	0	0	10
,, (Cylinder), 30° Tw. .. .. ,,	0	3	0
Nitric 80° Tw. .. .. per lb.	0	0	2¼
Nitrous .. .. ,,	0	0	1¾
Oxalic .. .. nett ,,	0	0	3⅛
Phosphoric, 1750° .. .. ,,	0	0	11½
Picric .. .. ,,	0	0	10¼
Sulphuric (fuming 50 %) .. .. per ton	15	10	0
,, (monohydrate) .. .. ,,	5	10	0
,, (Pyrites, 168°) .. .. ,,	3	5	0
,, (,, 150°) .. .. ,,	1	5	0
,, (free from arsenic, 145°) .. .. .. ,,	1	7	6
Sulphurous (solution) .. .. ,,	2	15	0
Tannic (pure) .. .. per lb.	0	1	2
Tartaric .. .. ,,	0	1	0½
Arsenic, white powdered .. .. nett per ton	11	5	0
Alum (loose lump) .. .. ,,	5	5	0
Alumina Sulphate (pure) .. .. ,,	5	0	0
,, ,, (medium qualities) .. .. .. ,,	4	15	0
Aluminium .. .. per lb. 2s. 8d. to	0	3	2
Ammonia, ·880=28° .. .. per lb.	0	0	3
,, =24° .. .. ,,	0	0	1¾
,, Carbonate .. .. nett ,,	0	0	3½
,, Muriate .. .. per ton	21	0	0
,, ,, (sal-ammoniac) 1st & 2nd .. per cwt.	35/- & 33/-		
,, Nitrate .. .. per ton	40	0	0
,, Phosphate .. .. per lb.	0	0	10½
,, Sulphate (grey), London .. .. .. per ton	10	6	3
,, ,, (grey), Hull .. .. ,,	10	5	0
Aniline Oil (pure .. .. per lb.	0	0	8¼
Aniline Salt ,, ... ,,	0	0	7
Antimony .. .. per ton	70	0	0
,, (tartar emetic) .. .. per lb.	0	1	0
,, (golden sulphide) .. .. ,,	0	0	10
Barium Chloride .. .. per ton	7	15	0
,, Carbonate (native) .. .. ,,	3	10	0
,, Sulphate (native levigated) .. .. .. ,,	45/- to 75/-		
Bleaching Powder, 35 % .. .. nett ,,	7	10	0
,, Liquor, 7 % .. .. ,,	2	10	0
Bisulphide of Carbon .. .. ,,	11	15	0
Chromium Acetate (crystal .. .. per lb.	0	0	6
Calcium Chloride .. .. per ton	2	5	0
China Clay (at Runcorn) in bulk .. .. .. ,,	17/6 to 35/-		
Coal Tar Dyes:—			
Alizarine (artificial) 20 % .. .. per lb.	0	0	8¼
Magenta .. .. ,,	0	3	9
Coal Tar Products			
Anthracene, 30 % A, f.o.b. London .. per unit per cwt.	0	1	2½
Benzol, 90 % nominal .. .. .. per gallon	0	2	6
,, 50/90 ,, ... ,,	0	1	10
Carbolic Acid (crystallised 40°) .. .. .. per lb.	0	0	5⅛
,, (crude 60°) .. .. per gallon	0	1	1
Creosote (ordinary) .. .. ,,	0	0	1
,, (filtered for Lucigen light) .. .. ,,	0	0	2
Crude Naphtha 30 % @ 120° C. .. .. .. ,,	0	0	11
Grease Oils, 22° Tw. .. .. per ton	2	5	0
Pitch, f.o.b. Liverpool or Garston .. .. .. ,,	1	14	0
Solvent Naphtha, 90 % at 160° .. .. .. per gallon	0	1	1
Coke-oven Oils (crude) .. .. ,,	0	0	3
Copper .. .. per ton	43	17	6
,, Sulphate .. .. ,,	14	15	0
,, Oxide (copper scales) .. .. ,,	45	0	0
Glycerine (crude) .. .. ,,	13	0	0
,, (distilled S.G. 1250°) .. .. ,,	45	0	0
Iodine .. .. nett, per oz.	0	0	9
Iron Sulphate (copperas) .. .. per ton	1	12	6
,, Sulphide (antimony slag) .. .. ,,	2	0	0
Lead (sheet) for cash .. .. ,,	12	0	0
,, Litharge Flake (ex ship) .. .. ,,	14	10	0
,, Acetate (white ,,) .. .. ,,	25	15	0
,, ,, (brown ,,) .. .. ,,	17	10	0
,, Carbonate (white lead) pure .. .. .. ,,	20	0	0
Nitrate .. .. ,,	20	10	0
Lime, Acetate (brown) .. .. per ton	6	12	6
,, ,, (grey) .. .. ,,	9	17	6
Magnesium (ribbon and wire) .. .. per oz.	0	2	3
,, Chloride (ex ship) .. .. per ton	2	7	6
,, Carbonate .. .. per cwt.	1	17	6
,, Hydrate .. .. per ton.	17	0	0
,, Sulphate (Epsom Salts) .. .. .. per ton	3	0	0
Manganese, Sulphate .. .. ,,	18	0	0
,, Borate .. .. per cwt.	2	15	0
,, Ore, 70 % .. .. per ton	4	5	0
Methylated Spirit, 61° O.P. .. .. per gallon	0	2	6
Naphtha (Wood), Solvent .. .. ,,	0	4	6
,, ,, Miscible, 60° O.P. .. .. .. ,,	0	4	10
Oils:—			
Cotton-seed .. .. per ton	18	10	0
Linseed .. .. ,,	20	0	0
Lubricating, Scotch, 890°—895° .. .. .. ,,	7	5	0
Petroleum, Russian .. .. per gallon	0	0	4½
,, American .. .. ,,	0	0	5½
Potassium (metal) .. .. per oz.	0	3	7
,, Bichromate .. .. per lb.	0	0	3¾
,, Carbonate, 90% (ex ship) .. .. .. per ton	18	10	0
,, Chlorate .. .. per lb.	0	0	5¾
,, Cyanide, 98% .. .. ,,	0	2	2
,, Hydrate (Caustic Potash) 80/85 % .. per ton	22	10	0
,, ,, (Caustic Potash) 75/80 % .. ,,	21	0	0
,, ,, (Caustic Potash) 70/75 % .. ,,	20	15	0
,, Nitrate (refined) .. .. per cwt.	1	2	6
,, Permanganate .. .. per cwt.	3	10	0
,, Prussiate Yellow .. .. per lb.	0	0	10¾
,, Sulphate, 90 % (ex ship) .. .. .. per ton	9	15	0
,, Muriate, 80 % (do.) .. .. .. ,,	7	17	6
Silver (metal) .. .. per oz.	0	3	5 11/16
,, Nitrate .. .. ,,	0	2	10
Sodium (metal) .. .. per lb.	0	3	4
,, Carb. (refined Soda-ash) 48 % .. nett per ton	6	2	6
,, ,, (Caustic Soda-ash) 48 % ,, ,,	5	5	0
,, ,, (Carb. Soda-ash) 48% .. .. ,, ,,	5	7	6
,, ,, (Carb. Soda-ash) 58 % .. .. ,, ,,	6	7	6
,, ,, (Soda Crystals) .. .. .. ,, ,,	3	9	0
,, Acetate (ex-ship) .. .. ,,	16	15	0
,, Arseniate, 45 % .. .. ,,	10	10	0
,, Chlorate .. .. per lb.	0	0	7
,, Borate (Borax) .. .. nett, per ton.	29	10	0
,, Bichromate .. .. per lb.	0	0	2¾
,, Hydrate (77 % Caustic Soda) (f.o.b.) nett pr. ton (10 ton lots)	11	5	0
,, ,, (74 % Caustic Soda) ,, ,, ,, (10 ton lots)	11	5	0
,, ,, (70 % Caustic Soda) ,, ,, ,, (10 ton lots)	10	5	0
,, ,, (60 % Caustic Soda) .. ,, ,, (10 ton lots)	9	2	6
,, ,, (60 % Caustic Soda, cream) (f.o.b.) ,, (10 ton lots)	8	15	0
,, Bicarbonate .. .. ,,	6	15	0
,, Hyposulphite .. .. ,,	7	15	0
,, Manganate, 25% .. .. ,,	9	0	0
,, Nitrate (95 %) ex-ship Liverpool .. .. per cwt.	0	9	6
,, Nitrite, 98 % .. .. per ton	30	0	0
,, Phosphate .. .. ,,	15	10	0
,, Prussiate .. .. per lb.	0	0	8
,, Silicate (glass) .. .. per ton	5	7	6
,, ,, (liquid, 100° Tw.) .. .. .. ,,	4	7	6
,, Stannate, 40 % .. .. per cwt.	3	5	0
,, Sulphate (Salt-cake) .. .. per ton.	1	17	6
,, ,, (Glauber's Salts) .. .. ,,	1	15	6
,, Sulphide .. .. ,,	7	15	0
,, Sulphite .. .. ,,	6	12	6
Strontium Hydrate, 100° .. .. ,,	8	10	0
Sulphocyanide Ammonia, 95 % .. .. per, lb.	0	0	7¼
,, Barium, 95 % .. .. ,	0	0	5
,, Potassium .. .. ,	0	0	7¾
Sulphur (Flowers) .. .. per ton.	10	0	0
,, (Roll Brimstone) .. .. ,,	8	0	0
,, Brimstone: Best Quality (nominal) .. ,,	6	10	0
Superphosphate of Lime (26 %) .. .. ,,	2	7	6
Tallow .. .. ,,	26	10	0
Tin (English Ingots) .. .. ,,	93	0	0
,, Crystals .. .. per lb.	0	0	6¾
Zinc (Spelter) .. .. per ton	21	5	6
,, Chloride (solution, 96° Tw.) .. .. .. ,,	6	15	0

THE

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munications for the Editor, if intended for insertion in the t week's issue, should reach the office not later than **Tuesday ing.**

lers are invited to forward items of intelligence, or cuttings from ewspapers, of interest to the trades concerned.

lers will oblige by making their remittances for subscriptions by or Post Office Order, crossed.

les, reports, and correspondence on all matters of interest to the al and allied industries, home and foreign, are solicited, ondents should condense their matter as much as possible, n one side only of the paper, and in all cases give their names dresses, not necessarily for publication. Sketches should be separate sheets.

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rtisements intended for insertion in the current week's issue reach the office by **Wednesday morning** at the latest.

CURRENT TOPICS.

THE LABOUR COMMISSION.

THE Royal Commission on Labour has now once more got thoroughly into working order, so to speak. The progression which has been made has been more noticeable than it was during the six months of last year through which the Commission sat, and it was with joy that we hailed the advent of the third division (C), because in this division, along with textile and clothing trades, occurred chemical industries.

The discussion of textile matters has been long, and though not absolutely completed, it is not very difficult to see the close of that section is not far distant. Naturally, therefore, the interest of those connected with the chemical trade began to awaken, only, however, to find that the building and kindred trades had usurped their turn.

In making the classification of trades, the Committee of Procedure stated that the list they had drawn up should be provisional and non-exhaustive, doubtless intending to include other trades not specified if circumstances permitted. Whether owing to the extensive nature of the proceedings, or to other reasons, it is difficult to say, but there seems a danger of the meaning of the word non-exhaustive ultimately bearing another interpretation; inasmuch as the tendency seems to be to curtail rather than to extend the number of trades investigated by the Royal Commission. One, and perhaps the most important object of the Commission was to hear the evidence which was to be adduced in relation to the eight hours a day movement, and the duration of working hours in general. The general bearing of the inquiry in this direction is difficult to gather, but, as far as the iron and steel industries are concerned, it would seem to be an impossibility to contemplate the eight hours' shift.

We are, just at present, rather at a loss to see the practical benefit which will accrue to the workers in those trades which have had the first innings and, therefore, the best chance of receiving mature consideration.

If money is any criterion, there ought to be something good to show. A period of nine months, with expenses to the tune of ten thousand pounds, are two facts which will doubtless raise the expectations of those who have great hopes of good from the appointment of a labour commission.

It does not necessarily follow that because the chemical trade has not been taken in its original place it will not be taken at all; but, judging from the results which have attended the investigation of the shipping and agricultural industries, &c., it would be reckless to prognosticate the good which the chemical trade will derive from a similar process of treatment.

It is to be hoped that the proceedings will not be so prolonged as in the past, especially when the chemical industries have their hearing, or else only those possessing a proleptic vision of the highest order will be able to foresee the

end of the sitting of this Commission; while the cost of the same will have attained to a figure which will render the information gained dear at the price, however valuable it may be.

ROBURITE AND ITS FUMES.

An important decision, involving the question of whether the gases given off during the use of roburite as an explosive are dangerous or not, was given by the coroner's jury this week at Atherton.

A collier employed in the mines of Messrs. Fletcher, Burrows and Co., fired a roburite cartridge, and soon after left work owing to his suffering from pains in the head. He was attended by a Dr. Martin, but he grew worse and died on the 12th ult. The death was attributed by Dr. Martin to inflammation of the brain, brought on by the inhalation of noxious fumes. An analysis was made by Dr. Paul, of Liverpool, but nothing positive could be deduced from the examination in the way of evidence.

He was of the opinion that the man had died of meningitis, but did not think death from meningitis alone could have taken place in three days. The symptoms which had been observed might be due to inflammation owing to the inhalation of noxious fumes containing nitrobenzene or aniline, but there was no evidence to prove that inflammation did or would arise owing to breathing atmosphere contaminated with such substances. The jury finally found a verdict to the effect that death was due to accidental inhalation of noxious gases, liberated by the explosion of the roburite cartridge.

This verdict is rather surprising in the face of the recent experiments made by Dr. Bedson upon the gases evolved during the explosion of a roburite cartridge being in direct opposition to the same. According to the views of this experimenter it appears that hydrochloric acid gas and carbon dioxide are the two objectionable emanations during the combustion of roburite, and that on no occasion was it possible to detect the presence of nitrobenzene, save that once or twice Dr. Bedson noticed a slight odour of that compound. The experiments which Dr. Bedson made seemed to throw important light upon this subject, removing a large amount of doubt which existed, having been conducted on a sufficiently extensive scale to warrant definite conclusions being made from the results obtained. Seeing the result of the case which we have just particularised there would seem to be need for further and more definite investigation upon this point, and it is to be hoped that the Explosives Committee of the Durham Coal Owners' and Miners' Association may see its way to extending the experiments already made, with a view to placing beyond doubt the facts relating to the use of this now extensively employed explosive.

THE SALT UNION, LIMITED.

At the half-yearly meeting of the Salt Union, Limited, held last week at the Cannon Street Hotel, London, Mr. C. Ashley, the chairman, in moving the adoption of the report, stated that it would be within the recollection of the shareholders that at their meeting in August last the present Board came before them with a statement of the policy which they proposed to carry out. It was a policy of reform, and involved a careful revision of prices with a view to reduction, increased economy, concentration of management, and modification of the system of distribution. On that occasion the shareholders were good enough to express confidence in the Board, and entrusted them with the task of carrying out these reforms. He thought the statement of accounts showed that the result of their work was decidedly satisfactory.—(Hear, hear.) He must, however, in justice to the directors point out that they had only had five months in which to turn round, and that as many of their reforms were not yet complete t benefits would not yet be seen.—(Applause.) At the last mee warned them that the directors might have to make consi reductions in prices, which might seriously affect their profits. had thought it desirable to make these reductions, and the holders would see that great economies must have been effe order to enable the directors to show the profits they did. economies had not been maintained by any failure to keep their or rolling stock in the highest state of efficiency, but it had bee by a concentration of management, by careful purchases of co other materials, and taking care generally that they got their m worth. The gross tonnage of salt delivered by the Union last y 1,472,000 tons, or 157,000 tons less than during the previou This decrease was due partly to contraction in trade and pa foreign competition. During the year the sum of £10,128. whi been spent on improving and repairing works had been charged general account. After deducting the cost of maintenance of distributors, commission, agency, and other charges, the profi all sources amounted to £243,911. After deducting the deb interest paid in July last and the 1st of January this year, amoun £45,000. the interim dividends to June 30 last at the rate o cent. per annum on the preference shares, and 5 per cent. ordinary and similar dividends for the last half-year, there wo placed to reserve £27,500. and the sum of £3,913. would be forward. During 1890 the contraction of trade, especially shipping branch, had been considerable, and there had been en attacks upon the rock salt trade with India. They had not yet t it wise to reduce their prices for salt in the Calcutta market, matter of future prices in this direction was receiving their att and he thought they would endeavour to keep the price as h wisdom dictated He thought the popularity of their salt eventually win them a victory.—(Applause.) In the Northern of America the sale of their salt had been decreasing for years, continued to decrease, owing largely to the native production a high duty on imported salt. In the Southern parts of Amer decrease was not so great. In other parts of America and man of India their exports had greatly increased. In England th only maintained their position, but they had improved it. Th been able to make satisfactory arrangements with some distri and they hoped shortly to come to terms with others. It was factory to be able to state that in the cost of manufacturing sal had been considerable economy effected, and they had bought a much lower rate than in the previous year. During the l months they had established amongst other reforms a system chasing fuel and material used in the manufacture of salt by Consequently they had bought at a lower price than during a since the formation of the Union.—(Applause.) They had con the policy of previous years of spending large sums of money t their works and plant in efficient condition. In most concer items for rates and taxes had a tendency to increase, but in th Union, owing to the special vigilance of their officers, rates an had been reduced.—(Hear, hear.)

In the balance-sheet there was an amount of £81,614., which sented the profits earned from carriage and other sources. The profit on carriage was over £39,000. as against £33,000. in This was one of the most satisfactory features in their accounts, b it must be borne in mind that decrease in tonnage generally decrease in profits on carriage. It was by judicious economy th result was obtained.—(Applause). The item of £1,990. for was kept in suspense until the work was completed and until they the result of the operations. During the past few months a portion of their works which were no longer fitted for their pu had been dismantled. By doing this they had not in the sl degree curtailed their earning power. They had placed a pr before the Cheshire distributors in their policy of reform, bu proposals had not been accepted collectively. Arrangements ha made with some of the distributors whose interests had b identical with those of the Union, and he thought the other distr must admit that the system wanted flexibility and alteration fr Union point of view. (Applause.) He hoped it would not b before all the distributors would be willing to make satisfactory ar ments with the Union. He intended to propose that the direc should not in the future exceed nine members. The Chairma referred to Mr. John Corbett's letter, which had been publish week Mr. Corbett said he did not seek the Union, and add the promoters of the Union sought him. Very likely that was s he did not think that a matter of congratulation to the shareh because it no doubt enabled Mr. Corbett to exact better term other vendors (Applause.) In addition to receiving £600,0 had by right of his covenant the power to take the position of m of his own works, and also the power of appointing a successor a period of years. (Cries of "Oh.") He claimed the right buy the salt made at his own works at the lowest price obtain the Cheshire districts. (Oh!) The shareholdors would see th

an advantageous commercial position for the Union to have ver which they had no control, and to have a manager with the hich Mr. Corbett possessed. For two years the Directors had pon Mr. Corbett that the only practical way of showing sym- ith the shareholder was to make some reasonable arrangements ndering his covenant. (Cheers.) But all proposals had been by him. In October last a proposal was made to him that a his agency for the past three years should be ascertained and into two shares between Mr. Corbett and the shareholders, and rwards Mr. Corbett's share should be purchased by the Union years' purchase. Mr. Corbett gave estimate of his profits at o. a year. Cries of "Oh.") This estimate was hardly con- vith Mr. Corbett's statement in his published letters. Besides £88,000 in addition to the £600,000. received for his works he o conditions. One was that he should be allowed at the end ears from the formation of the Union to sell his land for any He claimed the right to go into the salt trade. The Dirctors his, Mr. Corbett, however, offered to entertain a proposal to the Union would give him a few more thousands. (Laughter.) to Mr. Corbett, "The terms you offer are impossible. You asking a very large sum, and then you claim to be free to ur lands in competition with your old agency." Such a pro- ly needed to be stated to be condemned. The Salt Union Mr. Corbett other terms, but they had not been accepted. Mr. s sympathy for the Union had not been practical. (Applause.) bett's statement about the profit on the Stoke works was mis- It was only 6½ per cent. and this year the rate would be still was not correct to say that the active capital on other works ned an average of 7 per cent. On the contrary, it was very ore than the average rate of profits in the Worcestershire He (the Chairman) repudiated the charge of interference. bett had made certain claims under his covenants which their visers told them were not justified, and in the interests of the ders they had been advised to take legal proceedings, either by on or otherwise. (Hear, hear.) They had notified their to take this legal action to defend the shareholders, and he t help thinking that Mr. Corbett's letter was written as a blast. Anyone who might take the place of the directors e bound to follow the same line of action. He defended the ion of the Board, and remarked that they did not begin their ith covenants. (Hear, hear.) Their interests were the share- interests, and they fought not for covenants but for the share- (Applause.) The Board had not the slightest objection to a ee to consider reorganisation– (cries of "No" and "Yes,")— would object to any interference with their operations in , where they were carrying on reforms and other work. As the future, they had reason to believe there would be an of tonnage sold as compared with 1891, and that prices, hey might have to make reductions, would be remunerative. Directors had concluded with Messrs. Verdin a most generous isfactory arrangement as to distribution—(hear, hear),—and d only wish he could see Mr. Corbett's face when he that arrangement, and to know whether he felt the least to follow Messrs. Verdin's example. It must be satisfactory to holders to know that Messrs. Verdin had come forward in ire to benefit the Union and to do good for the shareholders.— e.) They had made a settlement which was favourable to nd which would largely strengthen the directors in Cheshire eir position as against Mr. Corbett. Owing to the extensive their trade and the favourable condition of their works, they und to produce salt cheaper than any competitors, and he and hoped, with increased trade and merchants' profits, and ed cost of manufacture, they would be enabled to give the lers an extra good report when next they met.—(Applause.) d the adoption of the report.

. W. Mills, M.P., seconded the motion.

enry Holbrook said his intention of asking for the appointment mittee of shareholders to inquire into the question of the ion of their property had been changed by the Chairman's He now thought their interests could not be better served placing confidence in the present board.—(Applause.) As by idence Bill, brine had been declared to be real estate, he sug- e levying of a royalty of 3d. per ton on alkali made in the rhood of Northwich. He urged the opening up of trade with

Giles called attention to the decrease in the export trade to d to the competition of Germany in supplying that dependency salt. He pointed out also that £116,000. one-third of the me, was a large sum to expend on the maintenance of plant, ative charges, and directors' expenses.

harles A. M'Dowell (Liverpool) was pleased with the report the speech of the chairman, and congratulated the share- n the present constitution of the Board. Dealing with the tion of the directors, he stated that immediately after the last meeting those gentlemen decided to reduce their fees by 25 per cent., and the chairman voluntarily accepted £600 in place of £1,500 which was previously paid.—(Applause.) He advocated the appointment of a paid general manager.

Mr. W. E. Briggs, as a friend of Mr. Corbett, asked to make a few observations. Mr. Corbett's action ought not to be looked at in an inimical light. That gentleman held £125,000 in their shares, and he had not sold one from the time he joined the Union. With regard to his severe and stringent covenants, it was unfair to ask him to give up the benefits to which he considered he was entitled when be parted with his most valuable property. He (the speaker) hoped an amicable arrangement might be come to by the Union to purchase Mr. Corbett's distribution business, which was very extensive. He suggested that a committee should be appointed to inquire into these matters.—(Cries of "No.") That was Mr. Corbett's wish. In his absence Mr. Brigg's moved that a committee of independent shareholders be appointed to investigate, confer, and report as to the best means of reorganising and administering the property of the Salt Union.

Mr. Crowther seconded the motion, and asked, as representing Mr. Corbett, that the points of difference might be submitted to him. If there was a serious desire to settle, he could not help thinking that the solicitors to the Union and himself might arrive at a settlement; but still he thought an independent body would be better to approach this question.—("No.")

The chairman: How far will Mr. Corbett bind himself to abide by the decision of a committee?

Mr. Crowther: I am not in a position to say.—(Laughter.) I am only suggesting a means of settling the question.

The motion was then put and agreed to.

The resolution proposed by Mr. Briggs was then submitted, but only five hands were held up in its support, all the rest being against it.

The dividend was passed, Messrs. Turner and Robinson were re-elected directors, and the proceedings terminated with a vote of thanks to the chairman.

COLOUR TESTING.

By C. W. Wilson.

(Continued from page 131.)

BARYTES, notwithstanding the recent claim of an eminent gentleman, is not naturally associated with any of those materials which, in their unaltered state, are used as pigments, and its presence is indisputable evidence of intentional adulteration, or the substitution of an inexpensive material for a comparatively expensive one, and its presence is justifiable only under the conditions explained in this paper.

The boards which are placed before you are painted respectively with barytes (the finest that is prepared) whiting, sulphate of lime and silica. They are painted one, two, and three coats. Now, whatever other properties they may possess you can at once see when mixed as oil paints, they are absolutely devoid of opacity or covering; in other words without any body. Barytes has not any chemical affinity for oil whatever, and even the finest has very little mechanical power to hold it, so that when applied to a wooden surface the oil is drawn away from it into the wood, leaving it on the surface. You can see that the three coats of barytes will tear off as a skin without the least abrasion. When it is used with pigments that are specifically lighter than itself, it will separate when painted, permitting the real pigment to come to the surface; that is, the barytes sink out of the oil because they have no affinity for each other. Whiting and terra alba are decidedly better oil absorbents; not only because of their structure, but because of some chemical affinity; greater in the whiting than in the terra alba. The terra alba used by the paint grinder is sulphate of lime. While the theory of inert pigments is a very pretty one, and one that has attracted the attention of everyone who has investigated paints scientifically, it is a fact that only those substances make with linseed oil a good paint, which have a decided chemical affinity for it, or such a powerful absorbent power as to be almost equal to chemical affinity, as exemplified by lamp black, which is generally considered an inert substance. These facts become more apparent when you consider how absolutely worthless barytes, for instance, would be in preparing a surface or body in coach painting. And Professor Church, in his admirable treatise for artists on the chemistry of paints and painting, states that many centuries of trial in works of art shows the pre-eminent superiority of white lead as a pigment, although this is probably the most active, chemically, of any of them.

Zinc white, owing to its certainty to scale, if for no other reason, will never replace white lead, though it may be desirable to use it in mixture with the white lead.

Probably, it will be best for me to run rapidly through the list of colours most used by house painters, and indicate briefly how each must be examined.

On the list which I have taken, the different colours are grouped, and the first group is the greens. The green most used is that known as chrome green. This as prepared for painters' use is, as you all know, a mixture of blue and yellow. For some reason difficult to explain satisfactorily, colour-makers by common consent have heretofore taken as the standard for the first quality of this colour an article containing only 25 per cent. actual colour, the balance being some mineral base, chiefly barytes. You are aware that many contend that a pure chrome green is really an inferior colour to one containing this earthy base; with this contention we have nothing to do at this time. We do know that the pure article can be obtained, and whether we take that, or one that is impure, we do want to know the actual quality of the standard adopted, and we want to know that we get that when we buy it.

Prussian blue and chrome yellow made separately and put together with or without any base material, are not so bright, and will not last so well as when the two colours are in a measure jointly made under certain conditions and in the presence of certain agencies. Finding out this was an advance in colour making, and gave the so-called permanent greens each under an arbitrary name of its producer. The superior brightness gave them the name of Paris green substitutes, and it was claimed that they were non-poisonous. These greens are known as Marseilles, Emerald, French Imperial, Sylvan, and so on. As the labels, so far as I remember, make no claim as to composition, and the composition may be just what the maker arbitrarily fixes, nothing in their make-up can be looked upon as an adulterant. As a rule they all consist of about one part actual colour and three parts mineral base. They are simply reduced chrome greens, well made, and sold under arbitrary names. All chrome greens as a rule are now made on the same general principles and with the same precautions to insure brightness and permanency. Chrome greens may be divided into two classes, one inclines distinctly to yellow in tone and the other to blue; the latter makes the nearest approach to the tone of Paris green, and the proprietary greens are as a rule of this class. The one class gives yellowish-green tints and the other bluish-green tints. The difference is due almost entirely to the character of the chrome yellow in the green, and even making full allowance for the difference in tint, the yellowish-green is the stronger.

Now how shall we test greens in a practical manner? This is not difficult if we would take for a standard a pure green, determine how closely to purity the sample shows itself, and then judge its value accordingly. It must be remembered that the price will not, can not, be in proportion to its colouring power, for very much the same labour is applied per pound to low-grade as to high-grade greens; that is to say, the reduced greens will always be relatively dearer than the pure greens.

The pure green for standard is in three different shades. We find the article to be tested to be in shades between our standard light and medium; we mix some of our light and medium together until we obtain the shade, as closely as possible, of sample; we reduce our sample with white lead, one-tenth, and spread out the tint. We next weigh out one part of our shaded standard and shy, 150 parts of white lead; next add white lead to the shaded standard until we obtain the same depth of tint made with one-tenth of sample. We weigh our remaining white lead and find thirty parts, showing 120 parts to have been used. This indicates that the sample has but one-twelfth the colouring strength of the standard, or is approximately an eighth per cent. green, altogether too poor a quality for any respectable painter to have in his shop. This method is only approximate, and is in favour of the low grade article, as I am quite sure the sample tested does not contain over five or six per cent. actual colour, and would not show more on analysis.

Now, several points will be noticed thus far. One is, we must see that our samples to be tested are of the same shade when several shades are manufactured.

In some tests made under the supervision of experienced painters for the National Association, absolutely no attention was given to this very important point, and wrong conclusions were drawn from the strength tests.

Another point is accuracy of weighing. It is always desirable to use small quantities in making tests; therefore, an accurate scale is necessary.

It is very convenient to have the working standards kept in collapsible tubes, as you see.

The test so far made indicates the colouring value. Some of the other points that should be noticed are clearness of colour, or tone and fineness. Of course there cannot be any comparison in fineness between a pure green and an adulterated one; if the former be properly ground it will be impalpably smooth, the inferior article invariably containing a cheap mineral base. We shall compare it for fineness with one of old recognised standard, but well ground. This test requires a little experience to make it properly by the palette knife on glass.

We find this method of testing fineness of grinding a very good one. It simply consists in rubbing out the colour under the knife on a piece of smooth glass; the coarse particles show their presence by

Chrome green being a mixture of blue and yellow should b as to permit the least separation of its elements; therefore, t should be looked into. Any green will give its blue out in lesser quantity when mixed very thin; but that which does it is the best in that respect.

Simple thinning with turpentine, equally for both sample parison, is a sufficient test.

In the factory we frequently make comparitive body tes manner: Take well-primed boards painted with such colou require good covering to hide it; the primed surface must b hard so that there will not be any misconception through a Across the centre of the board paint a stripe of black or whit ing to the character of the colour to be tested. The sam tested are equally thinned by weight and then applied equal the prepared surfaces; if complete covering be not obtaine will manifest itself, and the relative colouring may be estima degree of plainness with which the strip shows itself. Wh whites a lead-coloured ground with a black stripe should be u

It will be seen from this that progressive manufacturers ar to look closely to the practical qualities of their products, m such experimental tests as they suppose the wide-awake pain make.

Bronze and Quaker greens are essentially the same; w denominate the deeper colour bronze and the paler one Quak

The next green on the list is Paris green; there is so li used by the house-painter as to make it scarcely worth consid

Paris green is distinctively chrystalline in its character, and ness of colour depends entirely on this. Crystalline colours sarily objectionable to work; it is about as easy to do a good sand. If the colour be ground fine, the crystals are destroy brilliancy gone; it is then but little better than a bright pea has been customary to grind Paris white with Paris green, white being intended to hold up the colour as it were: but white is almost absolutely without body in oil, and helps what little body the green has, besides dulling its lustre. I this a green must be selected of very fine crystal, a trifle les Purity and quality must be determined comparatively, an article should be insisted on.

Some pressure tests I have here will show what little b green really possesses.

A ready test for purity is to dissolve out the oil with ben when the dry powder is obtained treat it with strong am which it should be entirely soluble if pure. This was illus experiment.

(Some pressure tests were shown to illustrate the small body possessed by Paris green and verdigris in comparison w chrome green.)

Verdigris is entirely a transparent colour, though as a ma one is perhaps as good as the other; this, like Paris green, i colour, and when pure is perfectly soluble in ammonia.

For all that is used of this colour, it is best to buy the fin tubes, as prepared for signwriters.

(To be continued.)

THE ESTIMATION OF COMBINED ALK IN SOAP.

J. ARTHUR WILSON, who was the first in one of his point out the error attendant on the use of the alcohol determining free caustic alkali in soap, advised, when bo and free caustic alkali are present simultaneously, the a the following method:—

Determine, firstly, the total alkali in the usual manner. T mine the amount of alkali required to neutralize the isol and resin acids from a weighed quantity of the soap. Obv difference is the alkali present as hydrate, carbonate or silicat etc. In the same paper above mentioned the following occurs: "Supposing palmnut, or cocoanut oil to have bee the fabrication of the soap, the determination of the Na_2O r neutralize the fatty acids becomes inaccurate, owing to the of the lower fatty acids; hence another complication arises. of course, may be of greater or less extent, according to the the fatty matter of the soap." Fortunately, this error can pletely excluded by operating in a very simple manner as foll

1. The alkali, in all forms, is determined by titration with acid in the usual manner.

2. Another weighed quantity of the soap is decompos Erlenmeyer flask with a slight excess of dilute H_2SO_4, and kept on the water bath till the fatty acids separate quite cl

k is then placed in ice water to cool, and then filtered. The fatty ls are washed three times successively with 250 cc. of boiling er and allowed to cool each time and filtered. The united filtrates diluted to 1 litre, and 500 cc. placed in a clear white beaker and ed with methyl orange; N-10 alkali is then dropped in till the id acquires the usual colour, after which a little phenolphthalein is ed, and the addition of standard alkali continued till a permanent k is established. The number of cc. used in the latter titration is to the soluble acids, and are calculated to caprylic acid. The fatty ls in the flask, and any little on the filter, are dried and weighed, and n dissolved in alcohol, and titrated with N-2 alcoholic alkali. The ali so used, together with that required for neutralization of the uble acids, and deducted from the total alkali, gives the alkali ting in other forms than as soap.

Of course, if desired, the soap may be decomposed with standard SO_4, and the alkali required to neutralize the methyl orange noted, ch, deducted from the total acid used, would give the acid ivalent to the alkali existing in all forms. In this manner we get—

Total alkali.
Combined alkali.
Insoluble fatty acids.
Soluble fatty acids.

The following examples illustrate the method :—

1.—Soap from cocoanut oil and other fats (highly watered). Total alkali by titration, 2·06% Na_2O.

	Grms.	%
ght of soap taken	17·145	
ght of insoluble fat acids	2·29 =	13·35
of N-2 alkali to neutralize	16·1 =	8·05*
of N-10 alkali to neutralize soluble acids	4·2 =	0·42*

of N-10 alkali to neutralize soluble acids 4·2 = 42 normal = 0·36% soluble acids (= caprylic).
al alkali used for both soluble and insoluble fatty ids, cc. = 8·47 normal.

$\frac{8.47 \times 0.031 \times 100}{17.145} = 1.53\%$ combined alkali.

	%
al alkali (Na_2O)	2·06
bined alkali (Na_2O)	1·53
combined	0·53
uble fatty acids	0·36†
luble fatty acids	13·35
al fatty acids	13·71

2.—French scouring soap. Total alkali by titration, 7·037%.

	Grms.	%
ght of soap taken	5·889	
ght of insoluble fatty acids	2·005 =	34·06
of N-2 alkal to neutralize	18·05 =	9·025*

of N-10 alkali to neutralize soluble acids, 10·7 = 1·07 normal = 6% caprylic acid.
al alkali used for both soluble and insoluble acids = 10·1 cc. normal = 20·2 N-2.

$\frac{20.2 \times 0.0155 \times 100}{5.889} = 5.32\%$ combined alkali.

	%
al alkali (Na_2O)	7·037
nbined alkali	5·32
combined	1·717
luble fatty acids	34·06
uble fatty acids	2·6†
al fatty acids	36·6

NCHESTER DISTRICT INSTITUTION OF GAS ENGINEERS.

HE members of this Institution held their twenty-second annual meeting on Saturday last at the Grand Hotel. In the absence he retiring president, Mr. T. O. Paterson (Birkenhead), in con- ence of an accident to his foot, the chair was occupied by Mr. W. Hutchinson (Barnsley), the past president. The hon. secretary Samuel S. Mellor, Northwich) submitted the annual report of the mittee, in which the members were congratulated on the con- d usefulness of the Institution. The total number of members now 87. Several successful meetings had been held during the Mr. W. R. Chester (Nottingham) and Mr. Braddock (Radcliffe) elected vice-presidents of the Institution. Mr. Thomas New- ng was re-elected treasurer, and Mr. Mellor hon. secretary. The y elected president, Mr. C. Armitage (Lancaster) was then intro- d to the meeting. He delivered his inaugural address, in which he discussed various technical questions of interest to gas engineers. Alluding to topics of more general interest, he remarked that the gas industry was assailed on all sides by competitors, and would-be wise people prophesied its extinction. Some little time ago water gas, made luminous by burning in contact with a comb made of a rare metal, was to supersede coal gas, but he was not aware that this had made a tithe of the progress prognosticated. Oil was an old competitor, and would continue to be used to a certain extent wherever the charge of gas was high. But in towns where gas was sold at a cheap rate it was only a question of time to entirely supersede it by gas. Electricity was now considered the great rival of coal gas, and by some people the *beau ideal* light of the future. For his part, he wished electricity every success. Why should purveyors of coal gas stand in the way of its progress? No permanent advantage could be gained by offering resistance. Give it full scope: in fact, all the assistance one possibly could to reach perfection When full advantage had been taken of the great sources of power in nature the fittest would survive. Great progress had certainly been made during the last decade in developing electricity, but was yet the light of luxury. The Manchester City Council had decided to supply the electric light to the central portion of the city, but they stated that whoever wanted it would have to pay for it, as they did for all other luxuries. It was evident that the City Council was fully aware that electricity could not be supplied as an illuminant as cheaply as coal gas. Some people preferred the electric light as a novelty, but the majority considered the pounds, shillings, and pence side of the question. The great desideratum in the cost of production was motive power, and until this cost was materially reduced electricity would not be able to compete financially with coal gas as a lighting agent. Wherever electricity was supplied corporations or gas companies, or upon whomsoever devolved the supply of gas, should be the purveyors, and they could without prejudice allow the public to make choice of their illuminant. He ventured, however, to predict that coal gas had yet a very important part to play in the world's industry. It would not only hold its own as a lighting agent, but would be more extensively used for cooking, heating, and motive power. The consumption throughout the country continued to increase year by year. The price charged for gas must necessarily vary according to the locality of the works and the demand for coke and other products. A few corporations were to be commended for endeavouring to supply gas at the lowest possible figure. Wherever this policy had been adopted the consumption had rapidly increased, and the cost had been materially reduced, as the increased production did not increase the cost in proportion.—A vote of thanks to the President for his address was accorded on the motion of Mr. C. E. Jones (Chesterfield), seconded by Mr. John Hutchinson (Barnsley). A paper on "Management," by Mr. Thomas Newbigging, was afterwards read and discussed.

* Normal. † = Caprylic.

Parliamentary Jottings.

THE POLLUTION OF THE MERSEY AND THE IRWELL.

SECOND READING OF THE JOINT COMMITTEE'S BILL.

ON the order for the second reading of the Mersey and Irwell (Prevention of Pollution) Bill, in the House of Commons, on Friday, last week,

Sir H. James said that some of his constituents entertained such strong objections to this measure that he felt bound to give expression to those objections. The bill was one for the purpose of dealing with the pollution of the rivers Mersey and Irwell. The objection taken to it was that while powers were given to the committee of the County Council to carry into effect the provisions of the Rivers Pollution Act—the general Act—of 1876, this private bill sought not only to enforce these powers but to legislate generally to create new powers for preventing the pollution of rivers. That might be a right or a wrong thing to do, but it ought not to be submitted to the House to be effected by a private bill. The bill also threw very great burdens, first, on the manufacturers, and secondly on the ratepayers, who were liable to pay rates at the present time. He might say that great benfits, no doubt, would be secured by the owners of property lying on the borders of these rivers, and those owners, while securing such benefits, would not contribute a single farthing to the expense of carrying out the improvements. They would reap all the benefit at the expense of the occupiers. There were other objections to the bill, but he would not detain the House by going into them. He could not perhaps, after the measures the promoters had taken to recommend the bill to the House, look for much support for his objections, but it was due to his constituents, who felt strongly in the matter, to make this statement. Of course if he received support he should take measures to enforce his views. (Hear, hear.)

Mr. Ritchie said that when the bill first came under his notice, he thought the provisions it contained were of so serious a character that he speedily came to the conclusion that if the bill remained as it was printed it would be quite impossible for him to recommend the House to read it a second time. In the first place, there was no doubt the objection that this Committee was really not charged with the duty of, and had not the power to contribute money out of the rates of the county for the promotion of a private bill, and while he did not wish to press the matter too far, one might fairly say that a body of this kind ought not to promote bills of this nature unless they met with pretty general acceptance among those interested. (Hear, hear.) It seemed to him that the bill was of so contentious a character that it would not comply with that particular. It proposed a very sweeping alteration of the general law with regard to the pollution of rivers, and while he did not wish to lay down the doctrine that the public law should not under any circumstances be altered by a private bill, this bill seemed to stringent that it went far beyond the scope of what he considered a private bill should deal with. It made certain alterations of procedure and other alterations of a more or less important character, but that to which strongest objection might reasonably and fairly be taken was that it swept away the whole protection given to the manufacturers and sanitary authorities by the general law. No proceedings could now be taken by any authority without first obtaining the consent of the central department, and the consent of the Local Government Board was dependent on whether or not due precautions were taken to prevent anything like the pollution of the river. He thought that it was a protection which ought within reasonable bounds to be given—(hear, hear.) He therefore informed the promotors of the bill that if that protection were to be swept away, as the bill proposed, he would feel it his duty to oppose it, and he suggested that they would probably remove a great deal of that difficulty if they would undertake to consent to the insertion in committee of a provision retaining the protection under the general law that no prosecution should be instituted without the sanction of the Local Government Board. He had received an assurance from the promoters of the bill that that course was assented to by them, and that they would submit to the Committee after having first obtained the sanction of the Local Government Board a clause which would restore the protection given by the general law to the manufacturers. While he thought objections might fairly be taken to some of the other provisions, they were not of such a nature as ought to preclude the bill from consideration by a committee. He would therefore recommend the House, on the understanding which he had named, to allow the bill to be read a second time.—(Hear, hear.) There was no doubt that the state of these rivers was very bad—(hear, hear), and he believed that manufacturers and others would gladly see effectual steps taken to get these rivers purified.—(Hear, hear.) The bill was of more importance than it might otherwise be in consequence of the Manchester Ship Canal, which made it of an urgent character, and with the precautions he had indicated, the House might hope that the right hon. and learned gentleman would not press his objections.—(Hear, hear.)

Sir W. HOULDSWORTH, after the very satisfactory statement by Mr. Ritchie, desired only to say a word in defence of the action of the Joint Committee who had promoted the bill. They were quite sensible of the objections taken by Sir H. James, but it must be remembered that the Joint Committee was a committee of the County Councils of Lancashire and Cheshire, while coupled with them were the representatives of eight or nine county boroughs, and that it was specially charged by an order of the Local Government Board with carrying out the Rivers (Prevention of Pollution) Act of 1876. They had found from experience that it was perfectly impossible to carry out that Act so as to produce any good result. The Act wanted strengthening, and considering the large area the Committee represented they felt it was their duty to come to the House, especially as no general bill was proposed. As to the manufacturers and others who might be affected by making the law more effectual, he believed it was recognised throughout the whole of Lancashire and Cheshire that it was desirable that action should be taken to carry out the Act of 1876—(hear, here), and he believed he was right in saying that they had found no objection on the part of manufacturers. Their interests should and would be protected by the committee that considered the bill, and it was relying on that belief that he heartily supported the measure.

Mr. SCHWANN trusted it would not be necessary to go to a division on this bill. At the same time he was bound to express a hope that the bill would prevent those evils which would be bound to arise if the water of the Irwell in its present condition were allowed to enter the Manchester Ship Canal. He had lived for ten years within a quarter of a mile of the Mersey, and could only say that it was a mephitic stream, and that the health of the people would seriously suffer unless drastic measures were taken. He believed that the position of the manufacturers would be sufficiently safeguarded by the amendments which had been made in the bill; therefore he hoped the House would pass the second reading.

The bill was read a second time without a division.

PETITIONS AGAINST THE BILL.

The time for petitioning against the Mersey and Irwell (Pre of Pollution) Bill has expired, and the total number of p deposited is only seven; but inasmuch as the Corporations of Heywood, and Rawtenstall, and the Ramsbottom Local Boar all signed the same petitions, the opposition represented is wid the number of petitions suggests. The Corporations who will on separate petitions are Salford, Bury, and Warrington. remaining three opponents are the United Associations of Ble the Calico Printers' Association, and the South Lancashi Cheshire Coal Association. The promoters of this Bill are the Councils of Lancashire and Cheshire, and the county boro Bolton, Bury, Manchester, Oldham, and Rochdale. Of the moters the Corporation of Manchester will appear in opposition alteration being made in the Bill, whilst the Lancashire County cil have lodged a general petition in favour of the Bill.

Legal Intelligence.

JUDICIAL COMMITTEE OF THE PRIVY COUN

(Present—Lord Hobhouse, Lord Macnaghten, Lord Hanne Richard Couch, and Lord Shand.)

IN RE S. G. THOMAS'S AND P. C. GILCHRIST'S PATENT

THIS was a petition by the Dephosphorising and Basic Patent pany (Limited) as assignees for the prolongation of the seven letters-patents granted between March, 1878, and Sept 1879, to Mr. Sidney Gilchrist Thomas, since deceased, in res inventions in the manufacture of steel and iron, and the furnac for such manufacture; in the making of refractory basic materi refractory bricks, and in various kindred methods connected wi new means of manufacturing steel. There was also a petition extension of letters-patent granted in October, 1880, to Mr. T and Mr. Percy C Gilchrist for an invention of "Improvem repairing and lining Bessemer converters and furnaces."

The petitioners were represented by Mr. Aston, Q.C., Mr. M Q.C., Mr. Bousfield, Q.C., Mr. Goodeve, Mr. Burnie, the Hon. Napier, and Mr. Roger Wallace; the Attorney-General and M Sutton appeared for the Crown; Sir Horace Davey, Q.C Macrory, Q.C., Mr. Lawson, Mr. Ingle Joyce, Mr. Percy Gy and Mr. A. J. Walter for opposing parties.

The ATTORNEY-GENERAL, upon the case being called on, t objection that the accounts were insufficient, and that the pr formation had not been given. He pointed out that the profit £128,000. Messrs. Bolckow, Vaughan, and Company wer licensees and the owners of one-third of the patent, and he co that the accounts ought to state the profit made by them. Attorney-General quoted various cases in support of his objectio

Mr. MOULTON, Q.C., in reply, submitted that the accounts fu all the necessary information. In stating the amount of the pro Attorney-General had added together the profits of the foreign English patents. Having regard for the exceptional nature of vention, he contended that the remuneration was inadequate. invention was of such national importance that there had b adequate remuneration.

Lord HOBHOUSE, in delivering judgment, said that in this c petitioners, who asked for a prolongation of the patents, showed face of their accounts that they had received a very large am profits. The profits of the English patent were stated by the to amount to upwards of £128,000, and besides that the profit foreign patents—which were merely circumstances in the case, they did not stand quite on the same footing as the English p amounted to upwards of £138,000. No case had been discov which a prolongation of a patent had been granted where the p had received as much as £20,000. So that, on the petitioner showing the profits of the English patent alone were six times a as any amount of profit on which their Lordships had felt the justified in reporting to her Majesty that the patentee had n adequately remunerated. Their Lordships must say that they f very difficult to conceive that if they were to go through the w the case as they had been invited to do, and if the witnesses that there was very great merit, and very unusual merit, that th would be so great and so unusual beyond the case of other pat to warrant them in doing that which was absolutely necessary prolongation of a patent—that was to say, report to her Maje the patentee had been inadequately remunerated. At all event a state of circumstances made it incumbent in the highest deg petitioners to show the full extent and the particulars of their re tion. Their Lordships did not rest any objection to the acco the circumstances that the licenseees' profits had not been stated considered that that was a matter which might or might not, ac

umstances, be incumbent upon petitioners to state, and without nto the circumstances of the case they were not prepared to say this instance the petitioners were bound to state the profits made licensees who had paid royalties.

would their Lordships rest upon another objection to the ts, namely, the lumping together of a considerable number of y way of stating expenses as set off against profits. That, again, hing which might be justifiable in circumstances, and it depend- each case to consider whether it was or was not justifiable for the e to state his items in a lump, or whether it was necessary to ngle them so that they might be judged of separately. But the persons who were assignees of one-third of the patent, and who nd who are still in the enjoyment of a free licence stood upon an different footing. It appeared that in the year 1879, Messrs. w, Vaughan and Company, agreed to take up the invention he condition of having a free licence and also an assignment of rd of the patent. Their Lordships took it from the petition sup- ted by the statement at the Bar, that in the year 1882, when the y was formed, that the third of the patent was assigned by . Bolckow, Vaughan, and Co. to the present petitioning com- nd that Messrs. Bolckow, Vaughan, and Co. received in lieu a number of shares in the petitioning company, and that the of one third of the patent were represented by the dividend on hares, and were accounted for in this sum of £128,000. Messrs. w, Vaughan, and Co. remained owners of one-third of the patent vents till 1882, and had had a free licence ever since, and had apparently on a very large scale under that licence. Now all fits which were made by virtue of the assignment of the one- hare in the patent were properly profits of the patent so far as cturing profits were assignable to a patent, and the profits which n made by the use of a free licence as compared with the profits y other persons who had paid royalties for their licences were rofits of the patent. Now the accounts showed absolutely of those two items; how much they were their Lordships did ow, nor could they tell the extent of the remuneration beyond ount admitted. Upon that ground their Lordships thought that e fell distinctly within the principles of Saxby's case, and of that merous set of cases which followed that case, which need not icularized. They held that the accounts were inadequate, and e petition must be dismissed with costs. Their Lordships that there should be only one set of costs among the objectors petition.

Our Book Shelf.

's CYCLOPÆDIA OF PRACTICAL RECEIPTS. Revised and ged by W. North, M.A., F.C.S. Seventh edition, 2 vols., p.p. Illustrated. London: J. and A. Churchill, 1892.

work is intended to be a collection of information concerning arts and trades, such as medicine, hygiene, and also a book of reference. At the commencement of the articles there is an tion when necessary, which is explained at the beginning of the nd which indicate that the name or description given is either , growing so, or only used in trade, a system which does much ase the value of the book to enquirers. Adulteration is one of articles of interest that we come to, which consists of a list of cles most commonly adulterated and the various adulterants ed, a table which will be of great use to those who desire to hat to suspect in the way of foods. One or two of the facts ted are rather interesting, though the bulk of materials used for cation are harmless. Red lead in curry powder is highly nable, as is also turpentine and tartar in gin. It is rather however, to read that sulphurous acid occurs in sulphur as an y. There is a very interesting resumé of air, which will be to by those interested in sanitary reform with avidity.

onia is dealt with at considerable length for a work of this and is well treated too, especially its recovery from coal in the gas liquor.

inium is naturally a subject which at once catches the eye and attention. Most of the processes now in vogue are briefly, but orily, explained, and the chief properties of the finished metal

remainder of volume I. is full of a mass of useful information, will be found reference to many arts and processes with which ho know them by name will be surprised to find how much not know about such every day matters.

e II. commences at iron, the salts of which are chiefly dealt system which is carried out with most of the metals.

lphabetical arrangement, which naturally brings certain things her strange combinations, for instance, blacking comes just before bleaching—its antitype—is satisfactory on the whole. By the employment of comprehensive titles several things of a collateral nature are brought together instead of being scattered up and down the work, It is doubtful, however, if the classification of creosote under K. because it is spelt kreasote, is altogether wise, it is spelt creosote several times in the text in other parts of the work, and in this country, at least, is customary to spell it with a "c."

The liquifaction of gases, oxygen photography, the phonograph and telephones are all articles well up to date. The diversified nature of the work is well instanced by the excellent article on knots under Ropes, which is very well illustrated.

It is a pity that the article on sewage has not been revised more fully, much of the data that is given might have been rendered of more practical value by including the more modern experiments and results in this direction. There are one or two printer's errors, which in one instance gives a most satirical ring to a sentence by speaking of the *affluent* water from treated sewage. Some effluents are indeed affluent in all the abominations of concentrated nastiness.

It is noticeable, however, that this work as a whole is remarkable for the practical nature of the information given, which is put forward in a manner which is not likely to mislead those who are but slightly acquainted with the subject of inquiry. The work, therefore, is one which is largely free from the confusion which so commonly exists in cyclopædia, and is therefore well suited as a source of information for household and general reference.

QUANTITATIVE CHEMICAL ANALYSIS. By F. Clowes, D.Sc., F.I.C., and J. B. Coleman, F.I.C.; 396 pp., with index; 83 woodcuts. London: J. and A. Churchill, 1891.

This work is stated by the authors to be a book designed for the use of students, upon lines which many years' experience in laboratory teaching has convinced the compilers of the work are the best for both teacher and student.

There is a pleasing novelty in the work, in the arrangement and treatment of many of the subjects. Naturally the typical examples in gravimetric and volumetric analysis have still been adhered to, but the value of these types have been enhanced considerably by the way in which they are put before the student.

The book is primarily divided into five parts. These parts are divided into sections, and the latter into numbered paragraphs. In the table of contents, the reference numbers of both pages and paragraphs are given; a feature which adds largely to the utility of the work; a full index putting the finishing touch to the efficiency of the book in this respect.

The first four sections of part one are chiefly devoted to the explanation of the mechanical methods and manipulation entailed in the subsequent performance of general analysis, and is well and fully illustrated. The main points referred to being the methods of weighing, determining specific gravity, boiling points, and such operations as filtration, evaporation, desiccation, and crystallisation; the first part concluding with a few concise rules to be observed *invariably* in general work. The chief methods of gravimetric analysis are described in part two, including the determination of the principal bases and acids.

Here again, is a method, which, if not new, is something out of the ordinary in works of this class. The *rationale* of each estimation is summarized at the commencement of the paragraph, and followed by a few notes and precautionary remarks. The description of the analysis is then given, so that the student sees the line of argument, so to speak, and the *raison d' être* of what follows at once.

Part III. is devoted to volumetric analysis, and does not present any particular feature to distinguish it from kindred works on this branch of analysis. It is noticeable that under the heading of indicators there is no mention of the irregularities occuring through the action of silicates and sulphuretted hydrogen with certain indicators, although the action of carbonic acid and ammonium salts is referred to

Part IV is one of the most useful in the whole work, and treats of general analysis, including technical analyses analyses of water, foods, such as milk, butter, tea, sugar, wine and beer, also tanning materials, and soap. Most of the methods described are those which are constantly used in the laboratories of practising analysts, and afford the student a knowledge of the methods which are in daily use In the valuation of soda ash there is one point, namely no mention is made of the method of determining the amount of caustic alkali present by means of silver nitrate as an indicator, titration with phenol-phthalein alone being instanced. The analysis of coal and coke as described is commendable, being precise and convenient. Of the subsequent sections there is no need to speak, since the analysis of milk and butter as described has been revised by Dr. Truman, and other sections by specialists in the subjects dealt with. The last section of this part is devoted to organic analysis.

Gas analysis is the main feature in Part V., and includes a description of Hempel's apparatus and the modified Winkler. The use of Lunge's nitrometer in the estimation of nitrogen oxides in nitrous vitriol is also explained, followed by a few special methods of estimating carbon dioxide and nitrogen. The determination of vapour densities concludes this the fifth and last part. Several useful tables are found in the appendix, a tabulation of the results of nine typical analyses, forming a valuable source of reference to the self-taught student. The work is one pre-eminently suited to the requirements of both teacher and student, to the notice of whom its merits afford ample recommendation, whilst it will be found one of the most useful and handy text books of technical analysis available to those engaged in such work.

Correspondence.

*** *We do not hold ourselves responsible for the opinions expressed by our correspondents.*

ANSWERS TO CORRESPONDENTS.

G. G. B.—Academie des Sciences, Paris.

F. D.—Write to the Customs at Liverpool. We believe there is a fee charged for such information.

J. S. & Co.—It has been discontinued.

A. I.—We are pleased to have been able to oblige you in the matter.

Fertiliser.—You can get it from Eyre & Spottiswoode, London, we believe.

Verax.—You are just too late. The time allowed for making such petitions has terminated.

Chemicus.—It is postponed. There will most probably be one on the second Friday in the month, but the matter is not definitely settled yet. Any further information (if any) will appear under Trade Notes.

A B.—We do not know of anything you can put into your O.V.; but you should stipulate that the same should be delivered at 150° Tw. during the winter. It will not freeze then. Between 145° and 148° it is liable to do so.

THE INSTITUTE OF CHEMISTRY.

ANNUAL GENERAL MEETING.

THE effect of the determined effort that has lately been made to bring home to the members of the Institute a sense of their responsibilities as electors entrusted with the selection of a council which shall represent their profession in reality, and not merely by the exercise of a polite fiction, was perceptible at the outset at the meeting held on March the 2nd, the attendance being about 140 and the number of proxy votes, it is said, not far short of 300.

The Treasurer's report, which was the first item on the agenda, was, save in one particular, the usual colourless document showing that the funds of the Institution were growing indeed, but growing only in consequence of the absence of those sources of expenditure which should be rightly incurred by an active professional body. The exception to this monotony referred to was the expense involved in reporting and printing the proceedings of the summer Conference, the publication of which to the members had been refused by the Council in spite of previous assurances to the contrary. As our readers will remember, we were enabled to checkmate this policy of suppression to a great extent by finding room in our columns for the papers that were under dispute. Mr. Howard, the treasurer, who professed ignorance of the amount of this particular item of expenditure, underwent a salutary course of heckling at the hands of Mr. Hehner and Mr. Kingzett, which served very well to show that some at least of the members were in a fighting mood. Much surmise has recently been excited by the impending appointment of a secretary in place of Mr. C. E. Groves, who has resigned, and whose services, which after all have been mainly clerical, are quite sufficiently rewarded by an honorarium of a hundred guineas. Candidates selected by the Council, and those who sent in their names spontaneously, were nine in number, and, it is whispered, included the names of some at least who might be supposed to be in too good a professional position to undertake an office of this kind. Of these Mr. G. H. Robertson was finally chosen. We do not know much about the character or career of Mr. Robertson, and our ignorance is extensively shared; but he will at least have the guidance of the failings of his predecessor to indicate in what direction and by what methods it is unwise to conduct the affairs of the Institute.

The President delivered his annual address and touched upon several important topics. He urged that it was undesirable to attempt to separate the profession into two opposed classes. In this we are heartily at one with him, as were also subsequent speakers of the party of Reform, but we would point out that there is no desire, even were it possible, to sharply differentiate professorial from professional chemists, but only a determination to give an adequate preponderance to the latter in the government of an Institute primarily founded for their benefit. Dr. Tilden insisted on the necessity of candidates Associateship having undergone a strict collegiate training be senting themselves for the practical examination, and he ga the hope that those knotty points of professional morality, wh discussed at the last Conference, might not prove beyond the the Censors to deal with. Dr. Frankland, having proposed thanks and indulged in sundry anecdotes more or less app usual request that the address should be printed was duly complied with.

The Annual report was praised before being read (it hav circulated in print some days ago) by Mr. Hehner, who found deal less meagre and consumptive than previous productio kind, it being raised in standard presumably so as to be a wo utterance on the part of Mr. Groves. In order to save tim decided to take the Report as read without of course prejud discussion thereon, whereupon Mr. Hehner pointed out that paragraph dealt with an alteration in the byelaws due sole initiative of the Council without the knowledge and sanctio general body of Fellows. He proposed an amendment, and a discussion took place as to whether such amendment was in was noticeable that in this discussion the party which sees per every act of the Council, was perceptibly less noisy and obstru usual, and some of the most stentorian champions failed to altogether. The President, however, intimated that he shou posed to rule that the amendment was out of order, whereu Hehner retorted that in that case he should be regretfully co move the rejection of the Report *en bloc*. There being a goo majority at his back, this threat brought the obstructives to th A compromise was finally effected by leaving the Report touched, and moving an amendment after its adoption, point Council that any vital alteration in the byelaws it proposed must be submitted to the members in general meeting assemb

The election of the Censors created little excitement, as th have hitherto been neither onerous nor likely to raise co Those eventually chosen were Dr. Bell, Dr. Frankland, Thorpe, and Messrs. Cassal and Howard, the last two b The President gave his casting vote in favour of Mr. Cas auditors were similarly selected and then came a long inter scrutineers having a much heavier task than usual, were so l it that it was decided to adjourn the meeting, which had alre some 3 hours, from 8.15 to 9.30, and the hungry members refresh and recuperate.

To all appearances the interest of the matter now consiste receiving the report of the scrutineers, and learning how far to obtain a representative Council had succeeded. A grea left, and more would have done so but that it was whisper piece of sharp practice would be attempted and a powerful e be made to defeat it. On the return of Dr. Tilden to the the formal announcement of the result of the election of C scrutineers arrived to report, and with Mr. William Thompso chester, as their mouthpiece, submitted the following statem President's decision.

The late secretary had busied himself in supervising the c the votes, and had ordered the scrutineers to refrain from ope which came from members who had not paid their subscript current year. The point raised therefore was whether these valid. It appears that Mr. Groves had kept this little pi tioneering tactics as a *bonne bouche* to celebrate his retire office, no such cause for disqualification having been previously He had armed himself with a letter from certain solicitors the legality of his proceedings, but as he declined to prod of the precise questions which he had submitted to them, no value could be attached to a ruling which was evidently *ex-p* provisions of the byelaws and the charter dealing with the member to vote under these circumstances, was somewhat Messrs. Cassal, Thompson and Hehner pointed out that the case the presumption was all in favour of acting accor precedent of 14 years standing, and according to every rul and common sense, but that failing this, it was at least n seek independent legal advice. The feeling of the meetin decided, and fully endorsed Mr. Hehner's strictures upon that might find excuse in a hard-fought municipal election tolerable in a society of gentlemen. It was pointed out wit able acuteness that if everything was to be in strict accordan most minute legal technicalities, it was open to any one that past elections were invalid and that the Council an were without legal standing. At this juncture the indigna meeting was intensified by the revelation that Mr. Groves h decided to endeavour to invalidate a large number of *bon* but had attempted to obtain the full advantage that might his action by circularising those who were likely to support party, urging them to send in their subscriptions at the tim and thus put themselves on the right side of the hedge. longed discussion, in which the wisdom of remaining to s

was abundantly proved, a compromise was arrived at. It was seen the easiest way out of the difficulty was to adjourn the meeting, inform those members whose votes had been put aside that it was essary for them to pay their subscriptions before they could be pted, and accordingly the report of the scrutineers will not be given Friday, March 11. In spite of the needless delay thus caused by contentious action of the late Secretary, there is little doubt of the hot. We hope to see a clean sweep made of the officially chosen ncil, and those elected in their place, who will truly represent the fession of Consulting and Analytical Chemistry.

Trade Notes.

ERSONAL.—Robert Ball, Esq., the Astronomer Royal for Ireland, been appointed Lowndean Professor at Cambridge, as successor to Adams.

OCIETY CHEMICAL INDUSTRY—MANCHESTER SECTION.—The eting of this section announced in our last issue for March 4th is unidable postponed till March 11th, when there will be a discussion Mr. Thompson's automatic smoke registering apparatus, and Mr. on will introduce a discussion on the practical purification of age.

OCIETY OF CHEMICAL INDUSTRY—LONDON SECTION.—In addi to the paper announced last week to be read at the next meeting he section on Monday, March 7th, 1892, two papers on "The Acid ion of Drawing Papers" will be read by Drs. Evans and Wirtz, and srs. Cross and Bevan respectively.

NEASINESS AT WIDNES.—Owing to the crisis in the coal trade ices have been posted in the works of the United Alkali Company, ited, at Widnes, and elsewhere, stating that if the collieries are ped it will be necessary for the company to close, or partly close, r works.

HE MANCHESTER CHEMICAL CLUB.—On Friday, 26th ult., a king concert was held in connection with the above club at the rooms at the Victoria Hotel. The chair was taken by Dr. wman shortly after 7-30 p.m., who, after a few brief introductory arks, started the business, or rather pleasure of the evening. There a long programme, in which selections upon wind and string ruments occurred, whilst the humorous element was well resented. In the rendering of songs of a more classical nature, e was ample evidence that the much-abused "chemic" did not ct the *cordæ vocales* of those engaged in such industries. There was ttendance of from fifty to sixty. Owing to Dr. Bowman having to e early, Mr. H. Grimshaw subsequently and ably filled the chair.

Market Reports.

TAR AND AMMONIA PRODUCTS.

enzol is again easier, 90's being quoted at 2s 4d. to 2s. 5d., while 90's may be had at 1s. 9d. to 1s. 10d. Anthracene is difficult of , and although the makers are inclined to take low prices, buyers not coming forward, 30% A is worth about 1s., and 30% B from 8d. ½d. Most other tar products show a lower tendency, with the e exception of pitch, for which there is still a good market.

he dealers in sulphate oi ammonia are still buying to cover in their ar" sales. March is usually considered the height of the season, it cannot be assumed that the demand is over. Speculators may e pocketed many orders, and they are principally responsible for present unsatisfactory position. There are still many requirements he part of the French and German buyers, as well as for home conption, and these will have to be filled soon. There are, meanwhile, rs at Hull at £10. 6s. 3d., and at Liverpool £10. 5s. Beckton has fallen to £10 2s. 6d, while outside London makes are ed at £10. 7s. 6d.

REPORT ON MANURE MATERIAL.

siness during the week has been without any animation, and for most part at easier prices.

ineral phosphates are easier all round. Florida, 75/80%, offers at per unit, and that is probably more than could be obtained for arge lines. Florida River rock offers at 8d. per unit, in cargoes, U.K., and less would probably be accepted. Continental phosphates offer freely at easy prices, but we do not hear of any large business being done.

There are still buyers of River Plate cargoes of bones for shipment at £4. 2s. 6d. This price required for cargoes afloat, though a shade less, might perhaps do for anything near at hand. For crushed East India bones, for shipment, £4. 7s. 6d. now required, and £4. 5s. refused. For East India bone meal, for shipment, £4. 7s. 6d. may be quoted as nearest value, though £4. 5s. accepted in quantity ex quay Liverpool for quality under fair average.

Nitrate of soda is very quiet at 9s. 4½d. per cent., on spot. Due cargoes are worth about 9s. 4½d., and December shipments 9s. 4½d. to 9s. 6d. per cwt., according to size and test.

Business continues to be done in dried blood at 9s. 6d. per unit, f.o.r. at works, and sales of fish Guano are reported at about 8s. 6d. per unit of ammonia, and 9d. per unit phosphates, nett cash, in bulk, ex store on Mersey. Kainit offers at 45s. per ton, nett cash, in bags, ex quay, Liverpool. Superphosphates unchanged.

THE LIVERPOOL OIL AND COLOUR MARKET.

LIVERPOOL, WEDNESDAY.

OILS.—Palm oil has continued quiet all the week, and has declined to £21. per ton. Sales are practically *nil*. Olive is virtually unchanged. There is very little business doing; prices range between £35. and £39. per tun. Linseed is steady; there has been a fair business doing, but prices remain at 19s. 6d. to 20s. 6d. per cwt. in export casks. Cotton seed: Liverpool refined remains firm at the advance, being still quoted 18s. 9d. per cwt., while American is stationary at 19s. 6d. In castor oil there was an increase in the sales at the beginning of the week, but to-day the enquiry is small. The sales during the week have been effected at $2\frac{9}{16}$ for good seconds Calcutta, and $2\frac{3}{16}$ for first pressure French. Tallow: The demand goes from bad to worse, but prices are still unchanged, with North at 23s. 9d. to 25s. and Souths at 26s. to 26s. 6d. per cwt. Resin, common, remains steady at 4s. 3d. per cwt.; higher grades are somewhat improved. Spirits of turpentine have advanced still further, having gradually risen during the week to 28s. To-day 27s. 9d. is the market price, at which there is a fairly good business doing. Petroleum quiet at old prices.

COLOURS unchanged. Ochres: Oxfordshire, common, £10., medium, £12., best, £15.; Derbyshire, common, 40s., medium, 50s., best, 60s. Welsh, best, 70s., seconds, 50s., and common, 18s.; Irish, Devonshire, 40s. to 45s.; French, J.C., 55s. to 60s.; M.C., 65s. to 67s. 6d. Umber: Turkish quiet. Devonshire, 50s. to 55s. White lead, red lead, and oxide of zinc unchanged. Venetian red, £6. 10s. to £10. Cobalt: Prepared oxide, 10s. 6d.; black, 9s. 9d.; blue, 6s. 6d. Zaffres: No. 1, 3s. 6d.; No. 2, 2s. 6d. Oxide of iron: common, £6.; medium, £10.; finest, £20.

MISCELLANEOUS CHEMICAL MARKET.

There has been some activity in the demand for heavy chemicals in anticipation of the impending stoppage of the collieries. There are no changes, however, to report in values of the staple products of the alkali trade. Caustic soda remains at former quotations, viz.:—f.o.b. Tyne, 77%, £11. 5s.; f.o.b. Liverpool, 74%, £11. 5s.; 70%, £10. 5s.; 60%, £9. 5s.; cream, 60%, £8. 17s. 6d., 10 ton lots. Soda ash, in various qualities, range still from $1\frac{3}{8}$d. to $1\frac{5}{8}$d. per degree f.o.b. Soda crystals, £3. 3s. to £3. 9s. per ton f.o.r. makers' works, according to package. Bleaching powder steady at £7. 10s. on rails, makers' works. In chlorate of potash the advance is well maintained, and makers are unable to take orders for near deliveries. Quotations on the spot are ruling from 6¼d. to 6½d. per lb. Chlorate of soda, 7¼d. to 7½d. per lb. Recovered sulphur rather easier in consequence of lower quotations for Sicilian. The prices on the spot, however, are fairly well maintained at £6. to £6. 5s. per ton, and forward delivery at £5. 10s. to £5. 15s. The demand continues good for muriatic and sulphuric acids, and there is no change to report in value. Salt cake nominally at 37s. 6d. per ton in bulk. Sulphate of copper continues depressed, and prices range from £14. 5s. to £14. 10s. per ton. Carbonate of potash and caustic are rather quieter on the spot, but without change in value. Acetates of lime and all other acetates still continue to drop in value, and the demand in this line is very quiet. Lead salts also continue to have a downward tendency. Nitrate of lead, £20. per ton. White sugar of lead, £25. 10s. per ton c.i.f. Brown sugar of lead, £17. 10s. per ton c.i.f. Oxalic acid without demand, and offered freely at 3d. per lb. Bichromates quiet, and without change in value. For prussiate of potash there is still a steady demand, and price well maintained. Sulphocyanides extremely dull. Carbolic acid crystals have declined slightly, owing to the utter absence of demand and excessive

stocks. White powdered arsenic has relapsed into quietness again, with prices on the spot ruling £10. 17s. 6d. to £11. Trade in finer chemicals is still reported unsatisfactory.

THE METAL MARKETS.

LONDON, Wednesday.—Pig iron firm; Scotch warrants closed at 40s. 9d. cash and 41s. one month. Middlesbrough 36s. 5d. cash, and Hematite 46s. 5d. Copper, steady. Chili bars, G.O.B.'s and G.M.B.'s closed at £43. 18s. 9d. to £44. cash, and £44. 11s. 3d. to £44. 18s. 9d. three months. Tin easier: Straits closed at £89. to £89. 10s. cash, and £89. 7s. 6d. to £89. 17s. 6d. three months. Australian, £89. 2s. 6d. cash; English ingot, £92. 10s. to £93. Lead dull, but steady: Spanish, £10. 16s. 3d.; English, £10. 17s 6d. to £11. 2s. 6d. Silesian spelter, ordinary, £21 to £21. 2s. 6d. Quicksilver: First and second hands, £7. 2s 6d. Copper shares dull: Cape $1\frac{7}{16}$ to $1\frac{9}{16}$; Copiapo $2\frac{1}{8}$ to $2\frac{1}{4}$; Libiola 3 to $3\frac{1}{4}$; Mason and Barry $4\frac{9}{16}$ to $4\frac{11}{16}$; Rio Tinto $16\frac{5}{8}$ to $16\frac{3}{4}$; Tharsis $5\frac{9}{16}$ to $5\frac{11}{16}$; Namaqua $1\frac{3}{8}$ to $1\frac{5}{8}$; Panulcillo $\frac{9}{16}$ to $\frac{11}{16}$.

WOLVERHAMPTON, Wednesday.—The market is to some extent disturbed by the impending coal strike. Pig iron rather stronger than a week ago, especially imported sorts from Yorkshire, Derbyshire, Nottinghamshire, and Lincolnshire. About 62s. 6d. to 65s. is asked for Staffordshire all mine hot blast, with part mines 46s. to 47s. 6d., and common 38s. Northamptons are quoted 46s. Finished iron quiet at £8. for marked bars, and £7. 5s. to £7. 10s. for sheets, doubles.

GLASGOW, Wednesday.—Market strong, with good business. Scotch neglected; closing with buyers at 40s. 9d. cash, sellers ask 41s. 2d. Middlesbrough done at 36s. 6½d. cash, also at 36s. 8d. one month; closing with buyers at 36s. 5d. cash, and 36s. 7½d. one month; sellers ask 1d. more. Hematite done at 46s. 4d., 46s. 3½d. and 46s. 4d. cash, also at 46s. 5½d. and 46s. 8d. one month; closing with buyers at 46s. 4½d. cash and 46s. 7d. one month, sellers ask 46s. 5½d. cash.

THE LIVERPOOL MINERAL MARKET.

The firm tone of our market has been well maintained. Manganese: Arrivals are very small indeed. Stocks have been further heavily drawn from, and sales have been made at advanced figures. Borate, 6¼d. per lb.; sulphate, £21. 10s.; oxalate, 1s. 6d. per lb.; chloride, £15.; carbonate, £12. 10s., steady. Magnesite: Raw lump quiet, with a little more inquiry for forward delivery. Raw ground £6. 10s., and calcined, £12. 10s. Bauxite (Irish Hill brand) firm at full prices—lump, 20s.; seconds, 16s; and thirds, 12s. French chalk: Arrivals are small this week, whilst a fair business has been done at last quotations. "Angel White" brand—silvery, 90s. to 92s. 6d.; prime quality, 90s. to 95s; and superfine, 105s. Barytes: Carbonate: Prime lump very scarce at 90s. to 95s.; nuts, 70s. to 80s.; whilst finest white sulphate is steady. "Angel White," No. 1, 70s.; No. 2, 60s. to 65s.; No. 3, 45s. Pumicestone steady. Iron ore: On account of the strike Bilbao ore is rather scarce; Irish and Cumberland easy. Santander and manganiferous, there is more doing. Emerystone: Best brands still scarce, and in good demand—No. 1 lump, £5. 10s. to £6.; smalls, £5. to £5. 10s. Fullers' earth quiet; best lump, 55s.; fine impalpable ground, £7; "Emerald" ground, 80s. Scheelite, wolfram, tungstate of soda, and tungsten metal in fair demand; prices firm. Chrome ore of high percentages continues to be sought after, both for spot and forward delivery at full figures. Antimony ore and metal more doing, prices firmer. Asbestos very firm. Potters' lead ore of best quality quiet; smalls, £12 10s. to £13. 15s; selected lump, £14 10s. to £15. 10s Calamine easy. Strontia sulphate (celestine) quiet. Limespar unchanged, especially for English manufactured; old G.G.B. brand in demand at 50s. (ground). Felspar unchanged. Fluorspar: Best quality scarce. Ferro manganese firmer, 75%, £12.; 85%, £13. 15s. Plumbago brisk. Spanish, £5.; best Ceylon lump at last quotations; Italian and Bohemian, £4. to £12. per ton. "Founders," £5. to £6.; Blackwell's "Mineraline," £10. French sand, 20s. to 22s. 6d. Ground mica, £45 to £50. China clay steady; common, 18s. 6d.; good medium, 22s. 6d. to 25s.; best, 30s. to 35s. (at Runcorn). Bog ore (oxide of iron) steady; finest quality, 22s. to 23s.

TYNE CHEMICAL REPORT.

Tuesday.

Chemicals continue steady. Bleach firm at £7. 10s. nett. Chlorate of potash stronger, and is now quoted at 6½d. per lb. less 6%. Prices are:—Bleaching powder, softs, £7. 10s. per ton, hards, £7. 15s. per ton; caustic soda, 77%, £11. 10s. per ton, 70%, £10. 5s. per ton; recovered sulphur, 2 cwt. bags, £6. per ton; soda ash, 48%, £5. 8s. 9d. per ton, 52%, £5. 17s. 9d. per ton, 56%, £6. 6s. 9d. per t 36%, £4 18s. 6d. per ton; white alkali, 48%, £6. 10s. pe £6 15s. 6d. per ton, 52% £7. per ton; hyposulphite of sod ton in 5-7cwt. casks, £7. 15s. per ton in 1 cwt. kegs, both in silicate of soda, 75° Tw. £2. 13s. 6d. per ton, 100° Tw. £3 ton, 140° Tw. £4. 2s. 6d. per ton; soda crystals, in casks, £ per ton gross weight, in 2 cwt. bags £2. 17s. 6d. pe weight; chlorate of potash, 6½d. per lb. less 6%; pearl £3. 10s. per ton; pure white sulphate of alumina, £ ton; blanc fixe, £7. 10s. per ton; chloride of barium, £ ton; nitrate of baryta crystals, £17. per ton; nitrate ground, £17. 10s. per ton; sulphide of barium, £7. per ton; of alumina, £28. 10s. per ton; aluminate of soda, £33. 10s hydrate of barium, £11. per ton.

Salt quiet, at 9s. per ton nett f.o.b. Tees.

Coals: Demand rather better, but prices are generally Best Northumbrian steam, 10s. per ton; gas coal, 8s. 3d. per ton; bunker coals rather better; manufacturing coals we

Durham Coal Trade: The general opinion is that, unless t withdraw the notices (which is most improbable), a stoppag colliery in the county is certain to take place on March 11th.

WEST OF SCOTLAND CHEMICAL

GLASGOW, T

In the paraffin section there is still nominally no change continues very flat with buying on retail scale only. Part ca is simply the pending congress of the candlemakers of En Scotland (by far the largest users of scale, and includin the Scotch Mineral Oil Companies, who are also candlemak is timed for March 11th in London. Contracts for the new not be placed till after this important meeting, and meanwh little passing, and stocks accumulate. Another cause is fo recently augmented imports from America, and consequent p

Last week's Leith shipments of sulphate of ammonia are 1,083 tons—an unusually large aggregate. Notwithstan market is flat to a degree, and practicable value has furt For prompt Leith it is done by several makers at £10. 5s. holders decline to part at that. The position of the article, regard this particular time of the year, is productive of ser pointment to all concerned; of forward dealing there is not on report.

In general chemicals there is no sign of greater vigour yet bleach and caustic are dull. Chlorate of potash, however, put up another fraction, and there is a rise of 10s. in bora unchanged, and all very quiet.

Chief prices current are:—Soda crystals, £2. 17s. 6d., alum in lump, £5. 10s., nett Glasgow; soda ash, 1⅜d., Tyne; caustic soda, white, 74°, £11. 5s., 70/72°, £10. 5 £9. 2s. 6d., and cream 60/62°, £8. 17s. 6d., all nett Liverp bonate of soda, 5 cwt. casks, £6. 15s., and 1 cwt. casks, £7. refined alkali, 1⅜d., less 2½% Tyne; bleaching powde nett Tyne; saltcake, 37s. 6d.; borax, English refined, boracic acid, £37. 10s., nett Glasgow; bichromate 3¾d., less 10% for Scotch and English deliveries (3½d., less 10% f.o.b. Glasgow); bichromate of so less 10% for Scotch and English deliveries (for export 2½d. f.o.b. Glasgow); chlorate of potash, 6¼d., less 5% any po of soda, 9s. 4½d. to 9s. 6d.; sulphate of ammonia, £10. 5s. f. salammoniac, first and second white, £35. and £33., le port; sulphate of copper, £14. 15s. less 5% Liverpool; pa (hard), 2⅛d., and soft 2⅛d. to 3d. per lb.; paraffin wax, refined, 3⅜d. to 4d.; paraffin spirit (naphtha), 7d. a gallo oil (burning) 5d., 5¼d. and 5½d. according to kind, at Scotch buyers (English sales about 1d. lower); ditto (l 865°, £4. to £4. 5s., 885°, £5. 5s. to £7., and 890/895°, Week's imports of raw sugar at Greenock were 18,285 bags.

New Companies.

Fletcher, Russell and Co., Limited.—This company was regi 16th ult., with a capital of £150,000., in £10. shares, to acquire, take concerns, and carry on the following business:—that of gas engineers, Warrington and elsewhere under the style of Thomas Fletcher & C scribers are:—

T. W. Fletcher, Grappenhall House, Warrington, gas engineer ...
A. Clare, Ivy Mount, Latchford, near Warrington, gas engineer ...
W. Russell, Carron Vale, Pendleton, Manchester, ironfounder .....
A. C. Russell, Kelvin Dale, Pendleton, Manchester, ironfounder ...
A. Neil, Belgrave House, Pendleton, Manchester, ironfounder ...
R. Wallwork, Manor House, Woodley, Cheshire, ironfounder .....
W. J. Forshaw, King-street, Warrington, solicitor .....

DE BRIDGE PAINT AND COLOUR COMPANY, LIMITED.—This company was red on the 20th ult., with a capital of £5,000 in £1 shares, to acquire and on the business of white lead, paint, colour, and varnish manufacturers, on under the style of the Guide Bridge Paint and Colour Co., at Palatine , Guide Lane, Guide Bridge, near Manchester.
uered without articles of association by Messrs. Hooper and Son, 69, ate Hill, E.C.

LTER LUCAS AND SONS, LIMITED.—This company was registered on the ult., with a capital of £50,000 in £10 shares, to acquire and carry on the busi- of hat manufacturer, carried on at Bury, by W. Lucas, and with a view thereto ered into an agreement dated 22nd February, 1891, between the said W. Lucas on he part and R. H. Auty of the other part. The subscribers are :—

	Shares.
W. Lucas, The Orchard, Bury, hat manufacturer	1
Mrs. Lucas, The Orchard, Bury	1
J. O. Lucas, The Orchard, Bury, hat manufacturer	1
J. Lucas, The Orchard, Bury, hat manufacturer	1
A. Wild 50, Windsor Terrace, Bury	1
R. H. Auty, 311, Walmersley Road, Bury, cashier	1
W. Nabb, Old Market Place, Bury, accountant	1

YGEN PRODUCING SYNDICATE, LIMITED.—This company was registered on th ult, with a capital of £60,000., in £1. shares, to acquire and develop nts No. 3,034 of 1891 for "A new process for producing oxygen gas," and No. 7 of 1891 for "A new self-acting apparatus for the automatic production of n," to acquire the machinery and plant erected for the working of the said nts at 31, Eagle Wharf-road, London, and with a view thereto to enter into the ment referred to in clause 3 of the Articles. The subscribers are :—

	Shares.
A. Schroeder, Kent Lodge, Wallace-road, Canonbury, N., clerk	1
W. Steinert, 57, Charles-street, Stamford-hill, N., journalist	1
J. A. Stoddart, 17, Northfield-road, Stamford-hill, N., shipbroker	1
A. E. Green, 17, Coleman-street, E.C., accountant	1
W. P. Wincott, 3, Brabant Court, E.C., merchant	1
R. J. Railton, 125, Stroud Green-road, Finsbury Park, N.	1
W. T. Mills, 195, Liverpool-road, N.	1

ALKER'S SMOKELESS FURNACE COMPANY, LIMITED.—This company was ered on the 17th ult, with a capital of £10,000., in £1. shares, to acquire work certain letters patent granted to Mr. H. Walker for "improvements in nnected with steam boiler and other heating, melting, and smelting furnaces, es, and the like, for various purposes," and also to acquire the provisional ication for "improvements in or additions to steam boiler and other furnaces." subscribers are —

	Shares.
H. E. Maynard, Griffin's Brook House, Selly Oak, Worcester	1
R. Stevenson, Gordon Lodge, Lady Margaret-road, N.W.	1
H. Walker, Villa-road, Handsworth, Palentee	1
Sir H. P. Burrard, J.P., Bedford Park, Chiswick	1
Viscounte A. Logothete, LL.D., 31, Rue Fortuny, Paris	1
H. J. Sibley, 15A, Arlington-street, St. James's, S.W.	1
Capt. J. E. Hunter, R.A., 41, Lower Belgrave, Eaton-square, S.W.	1

The Patent List.

This list is compiled from Official sources in the Manchester Technical oratory, under the immediate supervision of George E. Davis and ed R. Davis, who report professionally upon the value of Chemical nts.

APPLICATIONS FOR LETTERS PATENT.

d Condensor and Smoke Arrestor. H. Salmon. 2,908. February 15.
ctro Metallurgic Extraction of Zinc. G. Nahnsen. 2,913. February 15.
rovements in the Production of Aluminium. H. Pidot. 2,927. February 15.
ufacture of New Bases, and Colouring Matters therefrom. C. D. Abel. 2,953. February 15.
fuction of Carbonate of Ammonia and Chlorine from Chloride of Ammonium obtained by the Ammonia Soda Process. J. J. Knight. 2991. February 16
er Distilling Apparatus. N. Hunting. 3,013. February 16.
ipitating and Collecting Metals from their Solutions. A. G. Brookes. 024. February 16.
Improvements in Flash Lights. H. Axtmann. 3,025. February 16.
Improvements in the Manufacture of Ashphaltum. J. A. Dubbs. 3,026. February 16.
Improved Insecticide and Fertilizer. H. H. Lake. 3,029. February 16.
Improved Smoke-Consuming Furnace. J. Burton, F. E. Burton, and H. Neale. 3,046. February 16.
Oil Filtering Apparatus. H. Berk. 3,052. February 16.
Manufacture of Artificial Fuel. G. A. Fuchs. 3,053. February 16.
Improvements in Filtering Apparatus. W. P. Thompson. 3,064. February 17.
Improvements in the Calcination of Limestone. C. R. Cowens. 3,079. February 17.
Coating Tin and Terne Plates. A. D. Leyshon. 3,090. February 17.
Improvements in the Manufacture of Paper. J. Luke, jun. 3,091. February 17.
Improvements in Obtaining Cyanides. R. L. Barr, J. Macfarlane, E. J. Mills, and S. Young. 3,092. February 17.
Manufacture of Light Coloured Albumen from Blood. C. Cosinerie. 3,105. February 17.
Improvements in Electric Meters. S. Z. de Ferranti. 3,112. February 17.
Improvements in Primary Batteries. C. Thompson. 3,114. February 17.
Manufacture of Paints and Varnishes. H. Taylor. 3,142. February 17.
Anti-Pyretic and Anti-Neuralgic Chinolin Derivative. A. Bang. 3,147. February 18.
Improved Smoke-Consuming Furnaces for Upright Boilers. H. M. Fyfe. 3,179. February 18.
Smoke-Consuming Apparatus. S. Brooks. 3,188. February 18.
Improvements in Lubricating with Solid Lubricants. C. H. Ridsdale. 3,239. February 18.
Purifying or Refining Sugar. A. G. Brookes. 3,241. February 18.
Concentration of Liquors by Utilization of Steam arising therefrom. W. J. Mirrlees and A. J. Liversedge. 3,257. February 19.
Improvements in the Manufacture of Paper. J. Luke, jun. 3,260. February 19.
Electric Meters. C. Vogt. 3,297. February 19.
Improvements in the Manufacture and Utilisation of Gas and Apparatus therefor. O. Sapori. 3,305. February 19.
Recovering Hydrochloric Acid and Ferric Oxide from Ferrous Chloride. M. N. D'Andria. 3,308. February 19.
Improvements in the Calcination of Limestone. W. Thompson. 3,315. February 20.
Removing Burrs, &c., from Wool. S. E. Stirzaker and J. H. Roberts. 3,320. February 20.
Obtaining Cyanides from Spent Lime, Gas Liquors, Blast Furnace, and other Gases. J. Addie and J. Cunninghame. 3,326. February 20.
Devulcanizing Vulcanized Rubber to Recover Vulcanizing Materials. J. C. Margetson. 3,347. February 20.
Artificial Fuel. E. W. Harding. 3,355. February 20.
Improvements in Waterproofing Composition. T. Thomson. 3,369. February 20.
Improvements in Filter Presses. J. E. Swindlehurst. 3,378. February 20.

Gazette Notices.

PARTNERSHIPS DISSOLVED.

BIGGS AND WHEELER, Dunsden Eye, lime burners.
T. BROOK, J. H. PARKER, AND J. PARKER, under the style of T. Brook & Co., Deep Car. sanitary pipe and firebrick manufacturers, as far as regards J. H. Parker.
HILL BROS., Misterton, Nottinghamshire, brick manufacturers.
E. CETTI AND C. CETTI, under the style of E. Cetti & Sons, Lambeth, flint glass and enamel manufacturers.
PICKERING AND SLINGER, Blackburn, mineral water manufacturers.

Adjudications.

MADDEN, MICHAEL, AND WARD, BENJAMIN (lately trading as Madden & Ward), West Bromwich, late brickmakers.
HERBERT, ALBERT (trading as A. Herbert & Co.), Cardiff, enamel, slate, and marble manufacturer.

IMPORTS OF CHEMICAL PRODUCTS

AT

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending February 20th.

Acid—		
land,	26 pks.	Elkan & Co.
	6	A. & M. Zimmermann
	81	Phillipps & Graves
	50	Beresford & Co.
ate of Lime—		
	494 pks.	Lister & Biggs
il—		
many,	6 c.	T. H. Lee
Alum—		
Holland,	15 pks.	Ohlenschlager Bros.
Barytes—		
Germany,	135 cks.	W. Harrison & Co.
,,	19	S. H. Willoughby
,,	68	W. Fenton
Holland,	66	M. Ashby, Ld.
Boracic Acid—		
Italy,	50 pks.	J. Puddy & Co.
Caoutchouc—		
Madagascar,	21 c.	Wallace Bros.
Singapore,	67	Huttenbach & Co.
Savanilla,	26	Stiebel Bros.
U. S.,	19	,,
E. I.,	48	Ralli Bros.
Greytown,	52	C. de Murrieta & Co.
E. I.,	46	E. Barber & Co.
Singapore,	75	L. & I. D. Jt. Co.
,,	260	R. & J. Henderson
Zanzibar,	10	L. & I. D. Jt. Co.
Portugal,	7	Anderson, Weber & Smith
Mozambique,	70	Lewis & Peat
Zanzibar,	6	S. Figgis & Co.
Caustic Potash—		
Holland,	26 pks.	Spies Bros. & Co.
France,	110 c.	,,
Caustic Soda—		
Holland,	450 c.	Beresford & Co.
Ceresine—		
Germany,	32 css.	Beresford & Co.
Chemicals *(otherwise undescribed)*		
U. S.,	£15	L. & I. D. Jt. Co.
Belgium,	30 pks.	T. H. Lee
Germany,	71	,,
,,	128	A. & M. Zimmermann
,,	£10	W. Burton & Sons
Holland,	£15	G. Branlek
,,	£10	Phillipps & Graves
Germany,	2 pks.	,,
,,	13	Craven & Co.
Holland,	5	T. H. Lee

Citrate of Lime—

Italy,	10 pks.	C. Webster
,,	10	Kemble, Bishop & Co.

Copper Pyrites—

Spain,	2,900 t.	C. Tennants, Son & Co.

Cream of Tartar—

Spain,	5 pks.	B. & F. Wf. Co., Ld
France,	16	Smith, Abbott & Co.
,,	£1	S. Hanson, Son & Co.
Italy,	£129	Thames S. T. & L. Co., Ld.
Holland,	16 pks.	Middleton & Co.
France,	10	W. C. Bacon & Co.
Italy,	18	Howards & Son
France,	10	B. & F. Wf. Co., Ld.
,,	6	E. W. Carling & Co.

Dyestuffs—

Argols

Italy,	792 pks.	B. Jacobs & Son

Extracts

France,	1 pk.	Hernu, Peron & Co.
Belgium,	40	T. H. Lee
,,	25	L. J. Levinstein & Sons
U. S.,	50	Skilbeck Bros.
France,	10	J. H. & G. Scovell
,,	50	L. J. Levinstein & Sons

Gambier

Singapore,	84 pks.	Elkan & Co.
,,	221	W. H. Cole & Co.
,,	168	Von der Meden & Co.
,,	171	Evans & Co.
,,	93	Beresford & Co.
,,	489	J. H. & G. Scovell
,,	699	Brinkmann & Co.
Germany,	375	Prop. Butler's Wf.
Singapore,	422	Leach & Co.
,,	489	L. & I. D. Jt. Co.

Indigo

E. I.,	131 chts.	Elkan & Co.
,,	4	P. & O. Co.
,,	9	Kleinworth, Sons & Co.
,,	130 pks.	Ross & Deering
Germany,	17 chts.	L. & I. D. Jt. Co.
E. I.,	137	G. Ward & Sons
,,	14	Williams, Torrey & Co.
,,	20	Carey & Sons
,,	4	Anderson Bros.
,,	27	T. Barlow & Bros.
,,	24	Phillipps & Graves
W. I.,	4	Lewis & Peat
E. I.,	47	Darling Bros.
,,	147	Ernsthausen & Co.
,,	6	Arbuthnot, Latham & Co.
,,	6	Ripley, Roberts & Co.
,,	15	E. Bower & Co.
,,	39	Parsons & Keith
,,	55	Ernsthausen & Co.
,,	75	F. W. Heilgers & Co.
Sp. W. I.,	20	Cotesworth & Powell
E. I.,	3	Elkan & Co.
,,	15	J. Owen
,,	315	L. & I. D. Jt. Co.
,,	61	Stansbury & Co.
,,	63	F. Huth & Co.

Madder

Holland,	5 pks.	Phillipps & Graves

Orchella

Portugal,	89 pks.	N. Smith

Saffron

Spain,	2 pks.	C. Brumlen & Co.
,,	1	Major & Field
,,	1	Hodgkinson & Co.
,,	1	W. J Bush & Co.

Sumac

Italy,	700 pks.	J. Kitchin, Ld.
,,	710	Union L. Co., Ld.
,,	100	W. Barter & Co., Ld.
,,	10	Shearland & Co.

Tanners' Bark

Belgium,	35 t.	A. Vilry & Co.
U. S.,	10	W. A. Bowditch
,,	11	Dalton & Young
Belgium,	7	Arnati & Harrison
Germany,	51	D. & J. Fowler
Melbourne,	12	L. & I. D. Jt. Co.

Turmeric

Cochin,	164 pks.	L. & I. D. Jt. Co.
China,	106	H. A. Litchfield & Co.
E. I.,	210	L. & I. D. Jt. Co.
Cochin,	76	Hoare, Wilson & Co.
,,	1,113	J. P. Alpe & Co.

Valonia

A. Turkey,	92 t.	Beresford & Co.
,,	134	A. & W. Nesbitt

Farina—

Holland,	50 pks.	Prop. Chmbln.'s Wf.
,,	50	Hicks, Nash & Co.
Germany,	50	Humphreys & Co.
,,	50	T. H. Lee

Glucose—

U. S.,	30 pks.	170 c.	Page, Son & East
,,	300	1,700	Humphreys & Co.
,,	220	1,210	T. M. Duche & Son
,,	300	1,697	Prop. Scott's Wf.
,,	500	500	L. & I. D. Jt. Co.
,,	450	450	Fellows, Morton & Co.
France,	255	255	L. Norman & Co.
U. S.,	50	275	Pillow, Jones & Co.
,,	2,450	4,563	R. G. Hall & Co.
,,	2,000	4,000	J. Forsey
,,	80	440	Prop. Chmbln.'s Wf.
,,	50	302	Soundy & Sons
Belgium,	25	50	J. Barber & Co.

Manganese—

Japan,	61 t.	Matheson & Co.
,,	66	Phillipps & Graves
N. Z.,	166	A. B. Curtis & Co.
Sydney,	45	Harrold Bros.

Manure—

Germany,	20 t.	Odam's Chem. Mnre. Co.
,,	27	F. W. Berk & Co.
France,	1,020	J. Burnett & Sons

Ochre—

Germany,	1 ck.	Phillipps & Graves
France,	168	Arnati & Harrison
,,	20	J. L. Lyon & Co.
,,	58	C. F. Gerhardt
,,	115	W. Harrison & Co.
Holland,	18 pks.	Phillipps & Graves

Painters' Colours—

France,	22 pks.	Flageollet & Co.
Belgium,	19	J. L. Lyon & Co.
U. S.,	10	L. & I. D. Jt. Co.
Germany,	5	,,
,,	1	Craven & Co.
Holland,	9	Haeffner, Hilpert & Co.
,,	7	Phillipps & Graves
Germany,	1	,,
Holland,	5	W. H. Carey & Sons
U. S.,	5	Marcus & Co.
China,	80	Union L. Co., Ld.
Germany,	6	P. Jantzen
,,	89	G. Steinhoff
France,	4 cks.	Bennett S.S. Co., Ld.
Germany,	44 pks.	T. H. Lee
Sweden,	160	Pinchin & Co.
U. S.,	20	T. Ronaldson & Co.

Paraffin Wax—

U. S.,	71 brls.	C. T. Bowring & Co.

Phosphate Rock—

France,	5 t.	W. H. Carey & Sons
Belgium,	418	Lawe's Chem. Mnre. Co.

Pitch—

,,	36 cks.	Stobbs, Wilson & Co.
,,	53 brls.	C. B. Leighton

Plumbago—

Germany,	4 cks.	T. Stones & Co.
,,	26 brls.	J. Thredder, Son & Co.
Holland,	74 cks.	B. Gallaway
Ceylon,	82 brls.	H. W. Ison
Japan,	38 cks.	F. Beyer

Potashes—

Canada,	98 c.	G. Boor & Co.
France,	100 kgs.	T. H. Lee

Potassium Oxalate—

Germany,	19 pks.	A. Hughes

Potassium Hydrate—

France,	4 pks.	J. A. Reid

Potassium Sulphate—

France,	50 pks.	F. W. Berk & Co., Ld.

Saltpetre—

E. I.,	2,966 bgs.	C. Wimble & Co.
Germany,	35 cks.	J. Swire & Son
E. I.,	1,488 bgs.	Ralli Bros.

Sodium Acetate—

France,	67 pks.	Barr, Moering & Co.
,,	9	H. Lorenz

Sodium Hyposulphite—

Holland,	50 pks.	A. & M. Zimmermann

Sodium Nitrate—

Belgium,	35 pks.	M. D. Co.

Tartaric Acid—

Holland,	7 pks.	J. Owen
,,	24	B. & F. Wf. Co., Ld.
,,	7	Middleton & Co.

Ultramarine—

Belgium,	10 cks.	W. Harrison & Co.	
Austria,	2 pks.	Bailey & Leetham	
Germany,	3	H. Brooks & Co.	
Holland,	20 cks.	5 css.	Hernu, Peron & Co.
Belgium,	7		Leach & Co.
Germany,	10 css.		G. Steinhoff

Verdigris—

France,	4 pks.	B. & F. Wf. Co., Ld.

White Lead—

Holland,	5 brls.	J. L. Lyon & Co.
Germany,	7 cks.	J. Matton
,,	27	Randall Bros.
Belgium,	26	J. L. Lyon & Co.
Germany,	27	H. Lambert
Belgium,	16 brls.	D. C. Thomas & Sons

Zinc Oxide—

Holland,	100 brls.	M. Ashby, Ld.
,,	100 cks.	Barrett & Co.

LIVERPOOL.

Week ending February 25th.

Acids—

Havre,	17 cs.	Cunard S.S. Co , Ld.

Acetic Acid—

Rotterdam,	16 btls.	

Acetate of Lime—

New York,	351 bgs.	

Albumen—

Alexandria,	2 css.	

Aluminium—

New York,	5 brls.	Pickford & Co.

Ammonia—

Havre,	1 cs.	Cunard S.S. Co., Ld.

Barytes—

Rotterdam,	4 cks.	

Barium Chloride—

Rotterdam,	23 cks.	

Caoutchouc—

Havre,	508 pks.	C[illegible]d S.S. Co. Ld.

Chemicals (*otherwise*

Havre,	5 css.	
Rotterdam,	11 cks.	3
Rouen,	28	

Copper Pyrites—

Huelva,	1,570 t.	
,,	1,109	

Copper Precipitate

Huelva,	2,000 bgs.	
,,	3,069	

Cream of Tartar—

Marseilles,	3 cks.	Allan Bros. & Co.
Barcelona,	5 hds.	Sachse & Klemm

Dyestuffs—

Cutch

Rangoon,	5,919 bxs.	

Fustic

Vera Cruz,	4,669 logs	R. B. W[illegible] &

Indigo

Calcutta,	351 chts.	

Logwood

Laguna,	323 t.	

Myrabolams

Bombay,	5 750 bgs.	D. Sassoon &
,,	667	Ralli
,,	667	Aldridge, Sal[illegible] &
,,	520	O. M[illegible]
,,	3,790	
Calcutta,	2,000 pkts.	

Valonia

Smyrna,	656 bgs.	S. Vivante &
,,	162 t.	Essayan, Shal[illegible] &
,,	250	Barry B[illegible]
,,	791 2,444 bgs.	

Yellow Berries

Constantinople,	47 bgs.	G. Gulbenk[illegible]
Smyrna,	125 bgs.	K. & Gulbenk[illegible]
,,	7	C. & G. Gulbenk[illegible]

Farina—

Hamburg,	100 bgs.	Brown, Ge[illegible] &

Glucose—

New York,	550 brls.	

Manganese Ore—

Gothenburg,	25 t.	
Carthagena,	2,100 t.	Wigan Co[illegible] Iron

Ochre—

Marseilles,	3 cks.	
Rouen,	41	Co-op. W'sale S[illegible]
,,	54	R. J. Francis &

Phenic Acid—

Rouen,	11 cks.	Co-op. W[illegible] Scty.

Pitch—

Holland,	26 cks.	

Plumbago—

Genoa,	200 bgs.	

Potash—

Rouen,	60 cks.	Co-op. W[illegible] Scty.,
Portland,	59 brls.	Makin &

Saltpetre—

Calcutta,	340 bgs.	
Hamburg,	50 cks.	

Soap—

New York,	103 bxs.	
Marseilles,	3 css.	
,,	25 bxs.	Allan, [illegible] &

Soapstone—

Bordeaux,	200 bgs.	G. G. Black
Genoa,	250	W. Harrison &

Tar—

Gambakerleby,	1,942 brls.	

Tartar—

Bordeaux,	15 cks.	

Ultramarine—

Rotterdam,	20 cks.	13 css.

Verdigris—

Bordeaux,	3 cks.	

White Lead—

Rotterdam,	45 cks.	

Zinc Oxide—

Rotterdam,	20 cks.	

GLASGOW.

Week ending February 25th.

Alum—

Rotterdam,	40 cks.	G. & J. [illegible]

Aniline Colours—

Rotterdam,	5 css.	12 cks. J. Ran[illegible] &

Barytes—

Rotterdam,	57 cks.	

Tar
Natal, 55 pks. 90 drs. £94
Danzig, 261 cks. 160
Calcutta, 200 brls. 105
Brisbane, 50 drs. 9
Tar Oil
Paris, 20 cks. £50
Toluol
Calais, 50 mits. £171

Copperas—
Calcutta, 10 t. £21

Copper Sulphate—
Hobart, 5 t. £75
Lisbon, 5 4 c. £71
Wellington, 10 7
M. Video, 1 20

Cream of Tartar—
Lyttleton, 10 kgs. £50
Launceston, 10 c. 47
Brisbane, 15 75
Sydney, 1 t. 93
Wellington, 7 34
Dunedin, 1 94
B. Ayres, 2 10
Mossel Bay, 2 11

Disinfectants—
Penang, 100 drs. £35
Vera Cruz, 5 kgs. 11
Antwerp, 10 cks. 50
Gibraltar, 3 8
Hamburg, 34 160
Zanzibar, 33 pks. 37
Hamburg, 102 cks. 515

Fertilizers—
Cullera, 606 t. 2 c. £6,061

Guano—
Auckland, 5 t. £40
Guadeloupe, 351 3,259
Demerara, 50 500
Tregurier, 10 1 c. 100

Manure—
Demerara, 90 t. £900
Singapore, 1 10
Penang, 1 10
Bordeaux, 90 560
Ghent, 50 550
Rochefort, 110 620
Lubeck, 473 1,850
Hamburg, 98 9 360
Oratava, 7 10 46
Jersey, 81 550

Mirbane—
Sydney, 10 cs. £48

Mirbane Oil—
New York, 20 cs. £63
Hamburg, 12 c. 30

Nitric Acid—
Brisbane, 4 css. £9

Oxalic Acid—
Kurachee, 5 pks. £12

Phosphorus—
Lisbon, 2 cs. £14

Potashes—
M. Video, 2 brls. £15

Potash Crystals—
San Francisco, 5 c. £25
Genoa, 1 cs. 10
Philadelphia, 3 8
Brussels, 4 15

Potassium Bromide—
M. Video, 5 kgs. £30

Potassium Chlorate—
M. Video, 3 cs. £15
B. Ayres, 4 c. 11
Lisbon, 4 77

Potassium Cyanide—
Yokohama, 5 c. £27

Potassium Prussiate—
B. Ayres, 2 c. £13

Potassium Sulphate—
Barbadoes, 7 c. £66

Precipitated Strontium Carbonate—
New York, 7 brls. £49

Salammoniac—
Paris, 8 brls. £71
B. Ayres, 8 c. 14

Saltcake—
Antwerp, 140 t. £245

Saltpetre—
Brisbane, 5 t. 5 c. £123
Auckland, 1 22
Marseilles, 1 5 26
Bahia, 1 6 29
Otago, 10 11
B. Ayres, 10 11
Limon, 2 10 54
Rio de Janeiro, 1 1 24
Bahia, 5 15 128

Salts of Lime—
New York, 10 cks.

Sheep Dip—
Natal, 438 pks. £254
Sydney, 1 t. 5 c. 37
Algoa Bay, 9 16 213
E. London, 650 drs. 185

Soda Crystals—
Penang, 16 c. £3
Singapore, 10 2
Sydney, 26 t. 10 88
Smyrna, 17 3
Natal, 7 1
Algoa Bay, 12 6 48
Suez, 13 3

Soda Salts—
Melbourne, 6 c. £43
New York. 1 cs.

Sodium Acetate—
Melbourne, 18 c. £17

Sodium Bicarbonate—
Singapore, 5 c. £2
Brisbane, 5 5
Pelotas, 10 4

Subnitrate of Bismuth—
M. Video, 1 cs. £20

Sulphur—
Madeira, 25 t. 12 c. £324

Sulphur Flowers—
Fremantle, 2 t. £17

Sulphuric Acid—
Singapore, 1 t. 18 c. £20
Calcutta, 1 cs. 8

Superphosphate—
Auckland, 25 t. £75
Bilbao, 9 17 c. 30
Tregurier, 40 3 120

Tartaric Acid—
Launceston, 5 c. £14
Auckland, 10 65
Constantinople, 4 23
Melbourne, 30 cs. 10 kgs. 2 cks. 279
B. Ayres, 2 c. 12

LIVERPOOL.

Week ending February 24th.

Alum—
Seville, 8 c. £13
Calcutta, 19 t. 19 99
Lisbon, 2 2 10
Melbourne, 2 10
Malta, 1 5
Oporto, 8 8 44
Singapore, 2 4 14
Galatz, 5 27
Bombay, 1 2 6
Smyrna, 2 15 16
Portland, 7 42
Palermo, 1 6

Aluminoferric—
San Francisco, 5 t. 10 c. £16

Ammonia—
Trieste, 2 c. 3 q. £5

Ammonium Carbonate—
Toronto, 11 c. £16
Rouen, 1 t. 1 35
Gothenburg, 5 9
Genoa, 2 5 75

Ammonium Chloride—
Rotterdam, 4 t. 4 c 3 q. £80
Philadelphia, 26 8 1 590
New York, 9 7 224

Ammonium Sulphate—
Demerara, 15 t. 7 c. £175
Nantes, 30 10 330
Bordeaux, 5 1 q. 54
Rotterdam, 51 3 3 538
Messina, 6 24
Gd. Canary, 10 4 1 109
Valencia, 159 10 1 1,684
Ghent, 50 10 536

Barytes Chloride—
Messina, 6 c. £22

Bleaching Powder—
Baltimore, 208 cks.
Boston, 1,401
Calcutta, 71 102 css
Chicago, 100 brls. 30 b
Genoa, 26
Kingsey, 19
New York, 510
Philadelphia, 72
Smyrna, 9
Bilbao, 40 kgs.

Borax—
B. Ayres, 2 t. 9 c. £73
Constantinople, 6 10
Stettin, 1 2 3 q. £35
Rotterdam, 2 3 66
Mexico City, 5 7
Dunkirk, 5 3 155

Calcium Chloride—
Bombay, 6 t. 3 c. £19

Carbolic Acid—
Rouen, 13 t. 12 c. £489
Montreal, 1 cs. 5
Rotterdam, 7 10 352

Caustic Potash—
Chicago, 3 t. 10 c. £77
Dunedin, 1 1 23

Caustic Soda—
Algoa Bay, 10 bxs. 10 cs.
Amsterdam, 32 dms. 110 kgs.
Antwerp, 30
Bahia, 10
Baltimore, 135 brls.
Barcelona, 109 30 cks.
Bordeaux, 17
Boston, 537
Buffalo, 35
Calcutta, 107 50 kgs.
Carthagena (S.), 20
Chicago, 50 40 bxs.
Fiume, 35
Galatz, 110
Genoa, 117
Hamburg, 40
Hiogo, 300
Ibrail, 50
La Guayra, 30
Lisbon, 75
Malaga, 102 8
Malta, 10
Manilla, 100
M. Video, 350
New York, 607 120 10
Pernambuco, 25
Philadelphia, 100 25 cks.
Portland (M.), 20
Porto Alegre, 8 25 kgs.
Rio Grande do Sul, 25 dms.
Rotterdam, 52
Rouen, 17
San Francisco, 100
San Louis, 30
Seville, 92
Smyrna, 30
Sydney, 75
Talcahuano, 65
Tarragona, 130
Valencia, 30
Wellington, 45
Beyrout, 12
Cardenas, 9
Haifa, 10 brls.
Havana, 20
Maceio, 1
Oporto, 78
Pt. Natal, 20 cs.
Rangoon, 18
Rio de Janeiro, 39
San Jose de Guatemala, 10 dms.
Valparaiso, 10
Vigo, 10 brls.

Chemicals *(otherwise undescribed)*
Yokohama, 5 t. 5 c. £189
Genoa, 2 10 71
Hamburg, 10 17

Chrome Acetate—
Naples, 10 c. 1 q. £28

Citrate of Magnesia—
Rosario, 1 c. £8

Copperas—
Constantinople, 15 t. 2 c. £30
Calcutta, 27 9 53
Bombay, 14 13 29
San Francisco, 50 90
Singapore, 3 7

Copper Precipitate—
St. John's (Nfd.), 19 c. 2 q. £52

Copper Sulphate—
Coquimbo, 1 t. 2 c. £16
Brindisi, 4 54
Barcelona, 5 3 75
Antwerp, 18 14
Ghent, 2 8 35
Naples. 1 3 30
Tarragona, 3 3 2 q. 46
Alexandria, 10 9
Rosario, 1 5 1 15
Bordeaux, 30 5 2 486
Lisbon, 1 10 24
Leghorn, 7 13 1 242
Genoa, 9 18 3 137
Galatz, 10 7

Disinfectants—
Rio de Janeiro, 1 css.
Bombay, 5 t.

Epsom Salts—
Bombay, 20 cks. 100 kgs
Naples, 8
Piræus, 5
Rio de Janeiro, 60

Guano—
Castellon-de-la-Planei, 109 t. 19
Gandia, 100

Magnesium Carbonate—
Vera Cruz, 2 c.

Manure—
Malaga, 29 t. 8 c.
Bordeaux, 552 2 q.
Gd. Canary, 16 2 3
St. Nazaire, 50 3
Genoa, 447 18 3
Havre, 446 4
Antwerp, 10 1 3

Oxalic Acid—
Mexico City, 4 c.

Phosphorus—
Shanghai, 10 cs.
Kobe, 20
Hiogo, 20

Potassium Bichromate—
Vigo, 4 c.
Mexico City, 2 t. 1 3 q.
Ancona, 7
Lisbon, 5

Potassium Chlorate—
San Francisco, 2 t. 10 c.
Corunna, 10
Hiogo, 22 t. 10
Toronto, 5
Kingston, 1
Rotterdam, 10
Mexico City, 4
Shanghai, 1 4 3 q.
New York, 25
Havana, 1 10
Hamburg, 1
Genoa, 4 17

Potassium Prussiate—
Constantinople, 2 cwt.
Bombay, 5

Potassium Stanniate—
Bombay, 11 c.

Salammoniac—
Philadelphia, 2 t. 11 c. 1 q.
Alexandria, 2 10
Constantinople, 1 3
Malta, 4
Jeddah, 1
Syra, 17
Smyrna, 1 2
Beyrout, 2 2 2
Galatz, 6

Salt—
Abonnema, 6 t.
Barbadoes, 50
B. Ayres, 50
Calcutta, 3,700
Demerara, 37
Gd. Bassa, 5
Pensacola, 450
Savannah, 9
Trinidad, 16½
Valparaiso, 112 bg
Benin, 9
Boma, 150
Cameroons, 52
Chicago, 325
Hamburg, 18
Isles de Los, 25
Lagos, 20
New Orleans, 400
Quillo, 150
Rio de Janeiro, 50 cs.
San Francisco, 1,325
Sette Cama, 6
Sherbro, 50
Valparaiso, 200
Victoria (W. A.), 50
Warre, 4

Salt Cake—
Baltimore, 146 t. 6 c.

Saltpetre—
Savanilla, 16 c.
Pernambuco, 1 t. 8 2 q
Maranham, 5 7

Sheep Dip—
Pt. Natal, 2 t.
Algoa Bay, 2 8 c.

Soap—
Amsterdam, 495 css.
Calcutta, 7
Canada, 1

Curacao, 350 bxs.
Genoa, 207
Montreal, 150 3 cks.
Nassau, 10
Savannah la Mar, 113 bxs.
Smyrna, 4 css.
Toronto, 410
Accra, 66
Algoa Bay, 50
Ambriz, 40
Antwerp, 20
Carthagena(N.G.), 1
Chama, 6
Corfu, 6
E. London, 10
Ghent, 10
Gibraltar, 332 56 dms.
Kurachee, 625
Lanzarote, 50
Lagos. 100
La Guayra, 1 bl.
Loanda, 50
Loango, 40
Mexico City, 1
Baltimore, 25
Barbadoes, 400 1 cs.
Batavia, 5,000
Benin, 100
Bombay, 1,170
Bonny, 300
Boston, 5 cks.
B. Byres, 1
Calcutta, 45 500 bdls.
Calcera, 4
Callao, 5
Cameroons, 40
Canaria, 500
Cape Town, 40
New York, 700 65
Palma, 224
Para. 25
Pt. Natal, 190
Qua Ebol, 250
St. Lucia, 50
St.Vincent(W.I.)30
Shanghai, 1 500 1
Sierra Leone, 209
Teneriffe, 300
Trinidad, 200
Valparaiso, 30 25
Warre, 100
Winnebah, 134

Soda Alkali—
Barcelona, 100 brls.

Soda Ash—
Baltimore, 318 cks. 338 tcs.
Boston, 66 130
B. Ayres, 100 brls.
Ghent, 11
Lisbon, 4
Rio Grande do Sul, 20 cks.
Rio de Janeiro, 50
San Francisco, 136
Bombay, 14
Montreal, 3 400 bgs.
New Orleans, 125
New York, 460 1,513 tcs. 1,600
Para, 6 brls.
Philadelphia, 596 611 tcs. 240
Pirœus, 10 brls.
Santander, 22
Sherbrooke (Ont.), 192
Smyrna, 300
Toronto, 12 tcs
Valparaiso. 133
Weston (Ont.), 12
Yokohama, 100

Soda Crystals—
Calcutta, 2 brls.
Callao, 1
New York, 340 cks.
Alexandria, 15
Boston, 560
Gibraltar, 50
Guique, 10
Malta, 2
Rosario, 10 kgs.
Smyrna, 20
Valparaiso, 10

Sodium Arseniate—
Antwerp, 12 brls.

Sodium Bicarbonate—
Portland (M.), 50 kgs.
Rotterdam, 20
Antwerp, 20
Bombay, 250
Brantford(Ont.)100
Calcutta, 500
Genoa, 16 53 cks.
Hiogo, 500
Ibrail, 70
London, 50 5
Marseilles, 100
Naples, 91 2
Valparaiso, 200
Yokohama, 500

Sodium Bichromate—
Genoa, 11 c. 3 q. £15
Leghorn, 3 t. 6 2 75
Piræus, 1 23

Sodium Chlorate—
Hamburg, 1 t. £61

Sodium Nitrate—
Carthagena, 2 t. 10 c. £23
Gd Canary, 87 bgs. 98
Batoum, 597 t. 1 c. 12 q. 294

Sodium Silicate—
Carthagena (N.G.), 10 brls.
Madeira, 4

Sugar of Lead—
Calcutta, 2 t. 14 c. £88

Sulphur—
Toronto, 9 t. £80
Venice, 4 19 c. 2 q. 71
Portland, 2 2 18
Tarragona, 21 6 3 318
Antwerp, 1 9 2 22
M. Video, 16 15
Marseilles, 10 19 1 156
Montreal, 6 6 95
Porto Alegre, 1 9 1 13
Madras, 7 12 57
Cape Town, 17 3 8

Sulphuric Acid—
Mollendo, 4 c. 2 q. £7
Calcutta, 7 1 5
Rio Grande do Sul, 1 cs. 5

Tannic Acid—
Magog, 5 c. 2 q. £35

Tartaric Acid—
Rio de Janeiro, 7 c. £37
Trieste, 2 13
M. Video, 6 2 q. 45

Zinc Chloride—
Bombay, 5 t. 9 c. 3 q. £96

GLASGOW.

Week ending February 25th.

Ammonium Muriate—
Boston. 42 c. £45

Bleaching Powder—
Bombay, 44 c. £23
Calcutta, 30¾ t. 260

Coal Pitch—
Bombay, 19 t. 17 c. £42 10s.

Coal Tar—
Boston, 25 t. £53
Bombay, 470 c. 69
Straits, 32 t. 16 75

Coal Tar Pitch—
Boston, 64 t. 11 c. £140

Copperas—
Bombay, 44 t. 19½ c. £109

Dyestuffs—
Extracts
New York, £312
Boston, 108¼ c. £129 18s

Manganese—
Rotterdam, 21 c. £9

Painters' Colours—
Amsterdam, 2 cks. £8 5s.

Paraffin Wax—
Japan, 16 t. 1¼ c. £508
Bombay, 1 38

Pitch—
Baltimore, 44 t. £90

Potassium Bichromate—
Bordeaux, 3 t. 14½ c. £120
Rotterdam, 5 cks. 40
Bombay, 3 9½ c. 122

Soap—
Bombay, 7 t. 7 c. £140
New York, 1 11¼ 21
Hong Kong, 1 20

Soda —
New York, 11 t. 4 c. £130

Soda Ash—
Baltimore, 30 t. 2 c. £195
Victoria, 10 14¼ 57

Sodium Bichromate —
Rotterdam, 12 cks. £165

Sulphuric Acid—
Bombay, 22½ t. £169
B. Ayres, 32½ c. 14

Tar—
Baltimore, 25 t. £55

White Lead—
Monte Video, 35½ c. £39

HULL.

Week ending February 16th.

Alum —
Christiania, 322 slabs

Benzol—
Rotterdam, 49 cks.

Benzoline—
Ghent, 14 cks.

Bleaching Powder—
Bombay, 125 dms.
Reval, 109 cks.
Stettin, 50

Borax—
Christiania, 1 css.

Caustic Soda—
Adelaide, 10 dms.
Dunkirk, 11
Gothenburg, 177
Ghent, 10
Hango, 2 cks.
Libau, 113 dms.
Melbourne, 36

Chemicals *(otherwise undescribed)*
Antwerp, 10 pks.
Amsterdam, 16 50 cks.
Bergen, 5
Bremen, 2 css.
Bombay, 5 css. 835 cks.
Boston, 100 pks.
Copenhagen, 1 cs. 129 cks. 55 pks.
Christiania, 3 9
Constantinople, 50
Gothenburg, 74 10 css.
Harlingen, 20
Hamburg, 48 150
Kurrachee, 300 150 pks.
Libau, 1 20
New York, 15 50 css.
Rotterdam, 2,310 pks 41
Rouen, 6 cks.
Sydney, 12
Stettin, 42

Copper Sulphate—
Bombay, 150 kgs.

Cotton Seed Oil—
Antwerp, 2,042 c.
Bremen, 247
Constantinople, 261
Dunkirk, 100
Hamburg, 2,212
Rotterdam, 2,567
Stettin, 199
Stavanger, 68

Creosote—
Odessa, 220 cks.

Dyestuffs *(otherwise undescribed)*
Antwerp, 2 drums
Bombay, 4 cks.
Boston, 8
Danzig, 1 1 css.
Stettin, 78 bgs.

Linseed Oil—
Antwerp, 8 c.
Adelaide, 34
Bergen, 17
Bombay, 32
Christiansand, 149
Drontheim, 98
Hamburg, 129
Kurrachee, 96
Melbourne, 302
Rotterdam, 123
Sydney, 25
Stavanger, 21

Manure—
Dunkirk, 579 bgs.
Ghent, 764

Ochre—
Amsterdam, 21 cks.

Painters' Colours—
Antwerp, 90 pks.
Adelaide, 75
Bombay, 96 css. 80 12 cks.
Boston, 1 100
Copenhagen, 8
Christiania, 3 1
Christiansand, 40
Drontheim, 2
Danzig, 201 5
Hango, 2
Hamburg, 2 css. 14 cks. 3 pks. 3 dms.
New York, 266 cks.
Odessa, 132
Rotterdam, 1 20 4 dms.
Sydney, 384 60

Pitch —
Antwerp, 623 t.
Copenhagen, 24
Hamburg, 1 ck.

Salt Cake—
Melbourne, 44 cks.

Tar—
Antwerp, 5 cks.
Bremen, 1
Copenhagen, 5
Hamburg, 9
Odessa, 100

Varnish—
Antwerp. 5 cks. 1 css.
Amsterdam, 12
Copenhagen, 10

TYNE.

Week ending February 20th.

Alkali—
Rotterdam, 229 c.
New York, 5,678

Ammonium Sulphate—
Dunkirk, 2,400 c.

Arsenic—
Venice, 335 c.

Barytes Carbonate—
Rotterdam, 1,000 c.
New York, 21 t.

Bleaching Powder—
Lisbon, 99 c.
Venice, 117
Rotterdam, 467

Caustic Soda—
Venice, 607 c.
Christiania, 174
Rotterdam, 39
Seville, 164
Copenhagen, 17
Gothenburg, 1,305

Gypsum —
New York, 1,483 c.

Salammoniac—
Bilbao, 1 c.

Soda—
Rotterdam, 379 c.

Soda Ash—
Lisbon, 201 c.
Venice, 334
Christiania, 429
Drontheim, 109

Sodium Silicate—
Venice, 99 c.

Sodium Sulphate—
Lisbon. 613 c.
Aarhuus, 305

Sulphur—
Gothenburg, 75 t.

Superphosphate—
Venice. 10,000 c.

White Lead—
Bilbao, 10 c.

GOOLE.

Week ending February 10th.

Benzol —
Rotterdam, 9 cks.

Bleaching Powder—
Ghent, 15 cks.

Chemicals *(otherwise undescribed)*
Antwerp, 4 cks.
Rotterdam, 50

Dyestuffs *(otherwise undescribed)*
Antwerp. 1 ck.
Boulogne, 3 css.
Ghent, 2
Hamburg, 24

Manure—
Bruges, 1,108 bgs.
Dunkirk, 500
Ghent, 566

Pitch—
Antwerp, 618 t.
Dunkirk, 233

GRIMSBY.

Week ending February 13th.

Chemicals—
Dieppe, 10 css. 131 pks.
Hamburg, 16 5 dms.
Mollendo, 2
Rotterdam, 27 cks. 23

Chemical Products—
Malmo, 15 cks.

Coal Products —
Dieppe, 140 cks.

PRICES CURRENT.

WEDNESDAY, March 2, 1892.

Prepared by Higginbottom and Co., 116, Portland Street, Manchester.

The values stated are f.o.r. *at maker's works, or at usual ports of shipment in U.K. The price in different localities may vary.*

	£	s.	d.
Acids:—			
Acetic, 25 %, and 40 % .. .. per cwt.	7/- & 11/-		
,, Glacial .. .. ,,	50/-		
Arsenic, S.G., 2000° .. .. ,,	0	13	6
Fluoric .. .. per lb.	0	0	3¼
Muriatic (Tower Salts), 30° Tw. .. .. .. per bottle	0	0	10
,, (Cylinder), 30° Tw. .. .. ,,	0	3	0
Nitric 80° Tw. .. .. per lb.	0	0	2¼
Nitrous .. .. ,,	0	0	1¾
Oxalic .. .. nett ,,	0	0	3
Phosphoric, 1750° .. .. ,,	0	0	11¼
Picric .. .. ,,	0	0	10¼
Sulphuric (fuming 50 %) .. .. per ton	15	10	0
,, (monohydrate) .. .. ,,	5	10	0
,, (Pyrites, 168°) .. .. ,,	3	5	0
,, (,, 150°) .. .. ,,	1	5	0
,, (free from arsenic, 145°) .. .. .. ,,	1	7	6
Sulphurous (solution) .. .. ,,	2	15	0
Tannic (pure) .. .. per lb.	0	1	2
Tartaric .. .. ,,	0	1	0½
Arsenic, white powdered .. .. nett per ton	11	0	0
Alum (loose lump) .. .. ,,	5	5	0
Alumina Sulphate (pure) .. .. ,,	5	0	0
,, ,, (medium qualities) .. .. .. ,,	4	15	0
Aluminium .. .. per lb.	2s. 8d. to	0	3 2
Ammonia, ·880=28° .. .. per lb.	0	0	3
,, =24° .. .. ,,	0	0	1¾
,, Carbonate .. .. nett ,,	0	0	3½
,, Muriate .. .. per ton	21	0	0
,, ,, (sal-ammoniac) 1st & 2nd .. per cwt.	35/- & 33/-		
,, Nitrate .. .. per ton	40	0	0
,, Phosphate .. .. per lb.	0	0	10½
,, Sulphate (grey), London .. .. .. per ton	10	7	6
,, ,, (grey), Hull .. .. ,,	10	6	3
Aniline Oil (pure .. .. per lb.	0	0	8¼
Aniline Salt ,, ... ,,	0	0	7¼
Antimony .. .. per ton	70	0	0
,, (tartar emetic) .. .. per lb.	0	1	0
,, (golden sulphide) .. .. ,,	0	0	10
Barium Chloride .. .. per ton	7	15	0
,, Carbonate (native) .. .. ,,	3	10	0
,, Sulphate (native levigated) .. .. .. ,,	45/- to 75/-		
Bleaching Powder, 35 % .. .. nett ,,	7	10	0
,, Liquor, 7 % .. .. ,,	2	10	0
Bisulphide of Carbon .. .. ,,	11	15	0
Chromium Acetate (crystal .. .. per lb.	0	0	6
Calcium Chloride .. .. per ton	2	5	0
China Clay (at Runcorn) in bulk .. .. .. ,,	17/6 to 35/-		
Coal Tar Dyes:—			
Alizarine (artificial) 20 % .. .. per lb.	0	0	8¼
Magenta .. .. ,,	0	3	9
Coal Tar Products			
Anthracene, 30 % A, f.o.b. London .. per unit per cwt.	0	1	2½
Benzol, 90 % nominal .. .. .. per gallon	0	2	5
,, 50/90 ,, ... ,,	0	1	10
Carbolic Acid (crystallised 40°) .. .. .. per lb.	0	0	5
,, (crude 60°) .. .. per gallon	0	1	1
Creosote (ordinary) .. .. ,,	0	0	1
,, (filtered for Lucigen light) .. .. ,,	0	0	2
Crude Naphtha 30 % @ 120° C. .. .. .. ,,	0	0	11
Grease Oils, 22° Tw. .. .. per ton	2	5	0
Pitch, f.o.b. Liverpool or Garston .. .. .. ,,	1	14	0
Solvent Naphtha, 90 % at 160° .. .. .. per gallon	0	1	1
Coke-oven Oils (crude) .. .. ,,	0	0	3
Copper .. .. per ton	44	0	0
,, Sulphate .. .. ,,	14	10	0
,, Oxide (copper scales) .. .. ,,	45	0	0
Glycerine (crude) .. .. ,,	13	0	0
,, (distilled S.G. 1250°) .. .. ,,	45	0	0
Iodine .. .. nett, per oz.	0	0	9
Iron Sulphate (copperas) .. .. per ton	1	12	6
,, Sulphide (antimony slag) .. .. ,,	2	0	0
Lead (sheet) for cash .. .. ,,	12	5	0
,, Litharge Flake (ex ship) .. .. ,,	14	5	0
,, Acetate (white ,,) .. .. ,,	25	10	0
,, ,, (brown ,,) .. .. .. ,,	17	10	0
,, Carbonate (white lead) pure .. .. .. ,,	20	0	0
Nitrate .. .. ,,	20	5	0
Lime, Acetate (brown) .. .. per ton	6	10	6
,, ,, (grey) .. .. ,,	9	17	6
Magnesium (ribbon and wire) .. .. per oz.	0	2	3
,, Chloride (ex ship) .. .. per ton	2	7	6
,, Carbonate .. .. per cwt.	1	17	6
,, Hydrate .. .. per ton.	17	0	0
,, Sulphate (Epsom Salts) .. .. .. per ton	2	19	0
Manganese, Sulphate .. .. ,,	18	0	0
,, Borate .. .. per cwt.	2	15	0
,, Ore, 70 % .. .. per ton	4	5	0
Methylated Spirit, 61° O.P. .. .. per gallon	0	2	6
Naphtha (Wood), Solvent .. .. ,,	0	4	6
,, ,, Miscible, 60° O.P. .. .. .. ,,	0	4	10
Oils:—			
Cotton-seed .. .. per ton	18	15	0
Linseed .. .. ,,	20	0	0
Lubricating, Scotch, 890°—895° .. .. .. ,,	7	5	0
Petroleum, Russian .. .. per gallon	0	0	4½
,, American .. .. ,,	0	0	5½
Potassium (metal) .. .. per oz.	0	3	7
,, Bichromate .. .. per lb.	0	0	3¾
,, Carbonate, 90% (ex ship) .. .. .. per ton	18	10	0
,, Chlorate .. .. per lb.	0	0	6½
,, Cyanide, 98% .. .. ,,	0	2	2
,, Hydrate (Caustic Potash) 80/85 % .. per ton	22	10	0
,, ,, (Caustic Potash) 75/80 % .. ,,	21	0	0
,, ,, (Caustic Potash) 70/75 % .. ,,	20	15	0
,, Nitrate (refined) .. .. per cwt.	1	2	6
,, Permanganate .. .. per cwt.	3	10	0
,, Prussiate Yellow .. .. per lb.	0	0	10¾
,, Sulphate, 90 % (ex ship) .. .. .. per ton	9	15	0
,, Muriate, 80 % (do.) .. .. .. ,,	7	17	6
Silver (metal) .. .. per oz.	0	3	5¾
,, Nitrate .. .. ,,	0	2	10
Sodium (metal) .. .. per lb.	0	3	4
,, Carb. (refined Soda-ash) 48 % .. nett per ton	6	2	6
,, ,, (Caustic Soda-ash) 48 % . ,, ,,	5	5	0
,, ,, (Carb. Soda-ash) 48% .. .. ,, ,,	5	7	6
,, ,, (Carb. Soda-ash) 58 % .. .. ,, ,,	6	7	6
,, ,, (Soda Crystals) .. .. .. ,, ,,	3	9	0
,, Acetate (ex-ship) .. .. ,,	16	15	0
,, Arseniate, 45 % .. .. ,,	10	10	0
,, Chlorate .. .. per lb.	0	0	7½
,, Borate (Borax) .. .. nett, per ton.	30	0	0
,, Bichromate .. .. per lb.	0	0	2¾
,, Hydrate (77 % Caustic Soda) (f.o.b.) nett pr. ton 10 tons	11	5	0
,, ,, (74 % Caustic Soda) ,, ,, ,, 10 tons	11	5	0
,, ,, (70 % Caustic Soda) ,, ,, ,, 10 tons	10	5	0
,, ,, (60 % Caustic Soda) .. ,, ,, 10 tons	9	2	6
,, ,, (60 % Caustic Soda, cream) (f.o.b.) ,, 10 tons	8	15	0
,, Bicarbonate .. .. ,,	6	12	6
,, Hyposulphite .. .. ,,	7	15	0
,, Manganate, 25% .. .. ,,	9	0	0
,, Nitrate (95 %) ex-ship Liverpool .. .. per cwt.	0	9	4½
,, Nitrite, 98 % .. .. per ton	30	0	0
,, Phosphate .. .. ,,	15	10	0
,, Prussiate .. .. per lb.	0	0	8
,, Silicate (glass) .. .. per ton	5	7	6
,, ,, (liquid, 100° Tw.) .. .. .. ,,	4	7	6
,, Stannate, 40 % .. .. per cwt.	3	5	0
,, Sulphate (Salt-cake) .. .. per ton.	1	17	6
,, ,, (Glauber's Salts) .. .. ,,	1	15	6
,, Sulphide .. .. ,,	7	15	0
,, Sulphite .. .. ,,	6	12	6
Strontium Hydrate, 100% .. .. ,,	8	10	0
Sulphocyanide Ammonium, 95 % .. .. per, lb.	0	0	7¾
,, Barium, 95 % .. .. ,	0	0	5
,, Potassium .. .. ,	0	0	7¾
Sulphur (Flowers) .. .. per ton.	10	0	0
,, (Roll Brimstone) .. .. ,,	8	0	0
,, Brimstone: Best Quality (nominal) .. ,,	6	10	0
Superphosphate of Lime (26 %) .. .. ,,	2	7	6
Tallow .. .. ,,	26	10	0
Tin (English Ingots) .. .. ,,	93	0	0
,, Crystals .. .. per lb.	0	0	6¾
Zinc (Spelter) .. .. per ton	21	0	0
,, Chloride (solution, 96° Tw.) .. .. ,,	6	15	0

THE

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AND

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vertisements intended for insertion in the current week's issue d reach the office by **Wednesday morning** at the latest.

CURRENT TOPICS.

PROFITABLE SMOKE CONSUMPTION.

THE source of complaint against restrictive legislation on the part of manufacturers, lies as a general rule in the difficulties which are put in the way of trade by such measures. It is something quite out of the ordinary, though, to find reformers introducing a bill, which they apparently contemplate will almost compel both manufacturers and householders to make money, by complying with the conditions which it is sought to enforce.

Such, however, appears to be the case with the Smoke Nuisance (Metropolis) Bill, which was read for the second time in the House of Lords last week. It was urged by those who supported the bill, that if the present state of affairs were allowed to continue unchecked, it would, ere many years had elapsed, be practically impossible to maintain the Metropolis as a centre on account of the smoke nuisance. By means of the bill which was before the House, it was anticipated that not only would household smoke, which contributes so largely to the production of fogs, be prevented, but householders could if they liked succeed in making a profit by the recovery of the products of combustion.

This impression arose from the announcement recently made that Messrs. Brunner, Mond and Co. wash their smoke, recovering residuals which under favourable conditions would result in profit.

It is going rather far, though, to assume as a sequacious axiom that all manufacturers could make a profit by such a process; whilst for the householder the supposition is transcursitory in the extreme. This was pointed out by the opposition; but it is surprising to find even in their arguments, statements which are as inaccurate as the former suggestions are improbable. That sulphite of ammonium has a smell closely akin to sewer gas is news. No doubt sulphate of ammonium was the salt really referred to, it being merely a pretermission on the part of the noble lord who made the observation, to further explain that even then the smell was due to other compounds present in gas liquor, and not to the sulphate itself. It would be an exceptional fuel, however, that produced compounds similar to those occuring in crude gas liquors.

Although it is futile to advocate the prevention of smoke on the plea of its being profitable to do so, there is much in the bill which is commendable. One of the conditions specified is that, although householders are at liberty to please themselves as to what kind of grate or stove they use, that employed must efficiently prevent the pollution of the atmosphere with smoke. The use of anthracite coal is also advocated. It will be remembered that quite recently it was decided to give this fuel a fair chance to win favour in London as a household coal, and whilst making efforts to overcome popular prejudice in this matter, it is to be hoped

attention will be given to the opposition which its universal adoption is likely to meet with, from producers and vendors of bituminous coal.

Just at present there seems to be a general crusade against the pollution or adulteration of air, water, food, manure, &c., but of all things in which reform is most needed, we think the emission of smoke in our large cities in its present *status* is one of the most urgent. The deleterious effects spread over such a large area, and involve so many conflicting interests, that there are few who are not directly or indirectly affected by this question. At the same time such a large number fall within the category of offenders, that it is only by an enactment which applies individually that any remedial measures will be accomplished. It is on this account that we consider such a measure as that in question desirable, though we can hardly hope that a reform of this kind will be attended by such felicitous prospects as some seem to imagine.

THE COAL CRISIS.

The much vexed question of how far the threatened coal strike will be put into force will be answered in great measure synchronously with the publication of this issue. As was to be expected, the rush on the coal market has quickly subsided. This has, to a certain extent, been brought about by the evidences manifested in the Durham district, where the miners seem anything but unanimous in their intentions regarding the strike. It has been hinted that the strike might fall through altogether; but, according to the reports of the Miner's Federation, there are many districts where the notices have been served for stopping on the 12th inst. If the number of important works which have closed, or have given notice to that effect, affords any criterion, the general opinion is that a strike—and that an extensive one—will take place. The Crewe Works, the North Lonsdale Iron and Steel Co., and Messrs. Bolckow Vaughan and Co. have decided to close, in conjunction with many others who are not confined to the iron and steel trade. It is hard to say what the upshot will be; but, with so many opposing forces, it is hardly likely that the strike will be a prolonged one—though, should such be the case, the consequences will be serious and lead to troubles innumerable.

THE MERSEY AND IRWELL JOINT COMMITTEE.

A MEETING of the Mersey and Irwell Joint Committee was held at the Board-room, Mosley-street, Manchester, last Monday; Mr. J. T. Hibbert (chairman) presiding. On the motion of Mr. Haslam, seconded by Mr. Alderman Forrest, it was agreed to continue in the present offices of the Committee on a three years' lease, at a rent of £175. a year.

THE MERSEY AND IRWELL POLLUTION BILL.

The CHAIRMAN reported that the Parliamentary sub-Committee with reference to the Rivers Mersey and Irwell Prevention of Pollution Bill had considered the question of making some alterations in the bill. With Mr. Hulton and their agent, he was in London last week, and, Mr. Ritchie having asked for an interview, they saw the President of the Local Government Board at the House of Commons, and went fully into the proposals of the measure. The first point Mr. Ritchie raised against it was that they were attempting by private bill to alter public law. It was very difficult to find arguments to meet that view, but the principal argument he used was a reference to the difficulty which Salford had had in carrying out the present law. Salford, he pointed out, had been at work for five or six years, and had found that the existing law was not sufficient to enable them to do much. Another reason he advanced was that the Committee had at its back a stronger public opinion in favour of amendment than any other authority ever had before.—(Hear, hear.) That he thought he was justified in saying, because they had undoubtedly, in view of the completion of the Ship Canal, a very strong public opinion in their favour. Mr. Ritchie eventually gave way upon that point, but he made it a condition to his supporting the second reading of the bill that the Local Government Board should not be left out—that was, with reference to the proposal that proceedings might be taken without the Local Government Board's consent. He told Mr. Ritchie also that so far the manufacturers had not shown very strong animus against the bill, and that the local authorities, with one or two exceptions, were generally in favour of it; and he added that if it were made a condition that the Local Government Board should be reinstated in the bill the Committee would consider the circumstances and give the President of the Board a reply in due course. He and Mr. Hulton and the agent did consider the question, and they felt it was of great importance that the second reading of the bill should not be postponed, and that it would be better to accept the alterations than run the risk of postponement or loss of the bill. They eventually consented to the conditions laid down by Mr. Ritchie, and the Parliamentary sub-Committee had agreed that they were justified in making such concessions. The Parliamentary Committee had also agreed to certain changes and amendments in the bill, principally with regard to procedure, and with the view of trying to meet the wishes of the manufacturers who were to appear before them that afternoon. The first modification was with reference to the protection of existing channels. That clause in the old bill the Committee had proposed to omit, but after full consideration they suggested that it should be restored in their bill. With respect to procedure, they recommended that manufacturers should have notice of intended proceedings, and an opportunity of appearing before the Joint Committee before any proceedings were taken. After the interview they proposed that the result if adverse should be notified to manufacturers and to the Local Government Board, and that the manufacturers should have one month in which to object to the Local Government Board. Thereupon the Local Government Board might authorize proceedings or direct an inquiry to be held; and there they proposed an alteration of the law in providing that such an inquiry should be held within a month of objection, and that the result of the inquiry should follow within a month. This was putting the Local Government Board under pressure and they might kick against it.

Mr. Alderman WALMSLEY moved that the amendments suggested by the Parliamentary sub-Committee be approved.

Mr. Alderman FORREST, in seconding the motion, said he thought the sub-Committee had acted very wisely indeed in bringing forward a measure that would have a chance of passing.

The CHAIRMAN remarked that if the Joint Committee succeeded with their bill they would have done a very good work, and a very great work. They had been told by some Parliamentary authorities that it was perfectly useless to attempt to amend the Rivers Pollution Act, because there were so many persons interested in it that they could not without very great help and outside effort hope to carry such a bill. He hoped they should be able to amend the law, for if they succeeded their success would lead to its amendment generally all over the country.

The amendments were approved.

Subsequently deputations were received by the Committee from various manufacturing interests with reference to the bill. The first deputation consisted of Mr. P. Cross, Bolton, representing the United Bleachers' Association; Mr. Wright, of Rylands and Sons, representing the Dyers and Finishers' Association; Mr. Hepburn and Mr. Cort, representing the Light Goods Finishers' Association; and representatives of the Water Rights Association and the Paper Makers' Association; while the second deputation included Mr. R. Boyd, Mr. Heap (Strines), Colonel Thom, Mr. Bolder, Mr. Gammel, and Mr. Edgar, solicitor, all of whom appeared on behalf of the calico printing industry.

The CHAIRMAN, addressing the deputation, said he should like to express the regret of the Joint Committee that they had not been able to meet them earlier. When the Committee first entered upon its duties he stated that they should seek to confer with the manufacturers before taking any proceedings as to any pollution that might exist, and he was sorry that, owing to pressure of time, they had been unable to communicate with the manufacturers before lodging their bill. He desired to thank the various associations who had petitioned against their bill for the moderate language in which their objections were couched, and assured them that the Committee had been led to endeavour to meet those objections. One of the great objections which, he understood, they had to the bill was the proposal to omit the Local Government Board from taking part in proceedings against them. That clause the Committee had decided to modify, and they had also agreed to certain other alterations which he hoped would remove the objections of the manufacturers. They had no desire to ride roughshod over that class, for he believed that more good would be done by getting their co-operation than by compelling them to do certain things by process of law. When they received Sir Henry Roscoe's report on the subject of river pollution, the Joint Committee intended to ask the manufacturers to confer with them. The object of the Committee was to improve the rivers, and he believed himself it was to the interest of the manufacturers just as much as the general public to have the

pproved, so that they might be placed in possession of a ter supply for their different processes of manufacture.
ROSS said it was a question of what the Committee considered lution, and he did not know whether they were able at present Could the manufacturers afford to wait until the appearance of y Roscoe's report?
ULTON (Clerk to the Committee) said the Parliamentary agents he bill could not be brought in before the end of April. It ut fourteenth on the list.
ROSS asked what the bill aimed at. Was it to make the Ship ffectly clear? Was it a Ship Canal bill?
HAIRMAN replied that the Joint Committee had nothing to do Ship Canal. He did not think Mr. Cross was justified in of it as a Ship Canal bill.
derman FORREST said he could support the chairman's state- there had never been from the first a harassing or a nagging the part of the Committee towards manufacturers, whose s, indeed, some of them knew to their cost.
ILLICK pointed out that when the Ship Canal was made there seventeen acres of water in Salford, which would be almost tagnant. It was a question of health. If the river was not purer condition there would be such epidemics in Lancashire hire as had not been recorded for centuries. All their fortunes bound up in the preservation of their rights; but what was their fortunes if they lost their lives? The Committee were lmost solely at preserving the health of the community.
putation, after some further remarks, thanked the Committee ed. The CHAIRMAN promised both deputations that their ts would be taken into consideration.
port of the sub-Committee upon local authorities and their chemes was then read.
ASLAM moved the adoption of the report, and remarked that ary authorities should be conferred with, if only because the really commenced in the first instance with the rural sanitary es. They were the most difficult authorities to deal with, and n difficulties in dealing with sewage were very great.
ILLICK seconded the motion, and said another reason why uld confer with those authorities was that some of them were ral and caused no pollution at all.
port was adopted.
ATTON (chief inspector), in reply to the chairman, stated that ber of polluters on the Mersey was 180 and on the Irwell about

report dealing in detail with the various methods of local es for the treatment of sewage was submitted, and the Chair- gested that the report should be put into pamphlet form and ed, in order to show the public how the local authorities were with this subject.
e motion of Dr. HEWITT, seconded by Mr. Alderman FORREST, reed to have the report printed and copies sent to the local es and the newspapers.

MANGANESE IN NEW ZEALAND.

RDING to the "Handbook of New Zealand Mines," the ief ores of manganese found in that country are wad and with small amounts of rhodonite, which is a silicate of man- The chief source of supply seems to be Napier, where ore g about 45 per cent. of oxide is obtained on the Bay of

atistics of production available are not complete. It is stated Handbook" above referred to that upwards of 12,000 tons of se, valued at over £40,000., were exported from New Zealand e 31st December, 1885. It hardly seems possible that the aland ore is as valuable as represented, which would be per ton. Ore containing 50 per cent. manganese delivered at h, would not be worth more than this.
oduction of the years for which detailed statements have been re as follows:—

	Tons.	Value.
.....	2,140	£8,338
.....	.....	.....
.....	1,271	3,283
.....	.....	.....
.....	.....	.....
.....	318	809
.....	602	1,716

3 a bonus of £500. was offered for the first £2,500. worth of negeleisen or manganese bronze made in New Zealand from aterials and sold at a fair market price in a foreign market. r lapsed, however, without any application having been made onus.

SOCIETY OF CHEMICAL INDUSTRY.

SCOTTISH SECTION.

THIS section met in Glasgow on 1st inst. The attendance was rather above the average. Mr. E. C. C. Stanford, who presided, alluded regretfully to the loss the section had sustained in the death of Professor Wm. Dittmar, of the Glasgow and West of Scotland Technical College, a chemist not only of local, but European reputation. Professor Dittmar, up to about two years ago, when his health began to fail, took a close interest in the doings of the Society, and not long ago held the office of vice-President.

A paper on "The preparation of pure phosphoric acid from phosphate of soda," was read by Mr. G. Watson, junr., chemical manufacturer, Glasgow, who, unfortunately, was in rather weak voice, and could not be heard at all distinctly. The paper detailed a series of experiments carried on by the writer, and gave the results arrived at, although these are confessedly inconclusive as yet.

Dr. J. B. Readman, Mr. C. A. Fawsitt, the chairman, and others, spoke briefly at the close of the reading, the main burden being the great difficulty of producing pure phosphoric acid. The subject showed itself as one of general interest, and it was a matter of regret so much had been lost.

Mr. W. J. A. Donald, general manager of the Eglinton Chemical Company, Glasgow, then read his promised paper on Bauxite. Little recognised a quarter of a century ago, when the only known deposit was in France, within the district from which the mineral takes its name, it has since advanced in reputation, and may have a distinguished future before it in connection with the growing production of aluminium as a practical industrial metal. Twenty years ago Mr. Donald's company acquired a limestone field in County Antrim, Ireland, and incidentally a deposit of what was at first taken to be common fireclay. Entertaining doubts, however, he sent a sample to Sir Henry Roscoe for analysis, with the result that it was declared to be true bauxite. The only other country known to yield the mineral is Arkansas, and singular to say it possesses two distinct kinds. The following table gives a comparison of these four bauxites with fireclay, and with each other. The percentages have been taken from various competent authorities:—

	Fireclay.	BAUXITES.			
		French.	Irish.	Arkansas No. 1.	Arkansas No. 2.
Alumina	22·54	57·4	52·37	55·59	46·44
Silica	66·16	2.8	13·15	10·13	4·89
Iron	5·31	25·5	1·29	6·08	22·15
Lime	1·42	—	·48	—	—
Titanic Acid	—	3·1	5·20	—	—
Water combined ..	3·14	10·8	27·13	28·90	26·68

The author holds that the Irish bauxite stands out with some distinctness in its constituents, particularly in the very small proportion of iron present, and in its comparatively large percentage of titanic acid. The Antrim deposits are devoid of animal fossils, but yield some interesting finds of fossilized vegetation, specimens of which any member may examine on calling at the office of Mr. Donald's firm. The paper was received with much interest, and to questions afterwards put by Mr. C. A. Fawsitt and others, the author stated that, so far as he was aware, bauxite had not yet been used in the making of crucibles, and that no special use had been found as yet for titanic acid. A cordial vote of thanks was passed in each case.

THE ADULTERATION OF MANURES AND FEEDING STUFFS.

LIVERPOOL SECTION.

At the last meeting of this section, Dr. Schack-Sommer read a paper on the "Agricultural Fertilisers and Feeding Stuffs" Bill now before Parliament. Mr. Norman Tate presided. The lecturer said that no doubt they were aware that a new bill had been introduced into the House of Commons last July by Mr. Chaplin, in his new office as Minister of Agriculture, to regulate the trade in fertilisers and animal food stuffs. The bill ran upon the same lines as the food and drugs act, and was virtually an attempt to prevent the adulteration of fertilisers and feeding stuffs prepared upon chemical principles. The bill provided that a penalty of £20. be imposed for the first offence, and £50. for each subsequent offence, when a conviction was obtained for selling adulterated fertilisers and food stuffs for cattle, but that the seller would not be liable if the article purchased was not used for the purpose for which it was sold. It would, however, be no defence to allege that the purchaser having bought only for analysis was not pre-

judiced by the sale. An invoice must be given to each purchaser specifying the nature and quality of the article sold, and, in the case of a compound article, its material ingredients, with the percentage of each. Any material inaccuracy in the description in the invoice would render the vendor liable to the before-mentioned penalties. A seller should not be liable if he could prove that he sold the article as he received it, and a seller who could prove this, but who was convicted, should be able to recover the fine, with all costs and damages, either from the manufacturer or from the dealer from whom the articles were purchased in the first instance. Further, the Board of Agriculture may provide a chief analyst. In this bill he (the speaker) did not find any provision for punishing a dealer who sold feeding stuffs which, through decomposition or for any other reason, might be unfit for the purpose for which they were sold. The bill should also be so amended as not to unnecessarily harrass manufacturers in their business, or place obstacles in the way of honest dealing in such articles. Take, for instance, the case of a manufacturer who, having discovered a bye-product which contained one or more of the four principal fertilisers, mixes this bye-product with other substances containing the necessary fertilisers, why should he be compelled to divulge the secret of his manufacture by describing it on an invoice, as proposed in the bill? In his opinion, all that was necessary was a guarantee that the article sold contained certain proportions of nitrogen, phosphoric acid, potassium, and lime. In the case of feeding stuffs a very large trade was done in mixtures, and as long as these were guaranteed to contain stated proportions of digestible food, including protein, fat, sugar, and other non-nitrogenous extractable matter, there was clearly no necessity to require the secrets of manufacture to be published in an invoice for the benefit of trade rivals. As far as this country was concerned it might safely be assumed that if any adulteration took place it would arise through a system of fraudulent repacking by greedy middlemen, a species of cheating which the rules enforced on the Continent rendered impossible. What we wanted, in fact, was not an alteration of the English law, but the introduction of the German and Austrian rules of sale The weak point in the situation, as far as the chance of the adulterating middleman being found out was concerned, lay in the absence of testing stations and laboratories in connection with the various agricultural societies, as well as of travelling teachers, to give the farmers the technical instruction which they stood so much in need of. An ideal system would be for the agricultural societies of each district to form themselves into co-operative associations for the purpose of buying feeding stuffs and fertilisers in large quantities, and distributing them amongst their members; retaining a chemist well versed in botany, and employing teachers to travel in the district to impart instruction. There were to the best of his knowledge, only two agricultural testing stations and laboratories—one at Roehampton and one at Aberdeen. It might seem a small matter to those who believed that it is necessary for the purchaser of food stuffs to ascertain that they contain a guaranteed amount of fat or nitrogenous substances, and in the case of fertilisers to obtain satisfactory guarantees of the presence of a certain amount of nitrogen, phosphoric acid, lime, or potash, but the difficulty was for the purchaser to protect himself against such articles as contained injurious matters, in addition to those which may have been added for the purpose of adulteration, or occurred through careless manufacture, or the use of unsuitable or inferior raw material. This difficulty opened up a great field for chemical research, and to discuss the question to any useful end he would have to draw their attention to certain principles—first, in connection with the fertilisation of the soil; and, secondly, the manufacture of food stuffs for cattle. With respect to the selection of manures, the primary object should be to replace those constituents which the previous crop had removed from the soil. With the help of a useful table prepared by Mr. Lierke, of Westeregeln, giving approximately what the best known plants extract from the soil during their growth, and also what the most important fertilisers are composed of, and with the currency of such trade rules as those referred to as in force in Germany and Austria, there would be little necessity for any legislation to prevent adulteration. In the case of feeding stuffs it was a more difficult task to formulate rules, as in addition to knowing the amount of protein present, it was desirable to know how much was digestible. It was also important to learn, not only whether it was adulterated in the general sense of the term, but whether the food was clean and wholesome. The introduction of an obligatory guarantee was of the highest importance both to agriculturists and manufacturers. A certain reasonable minimum figure should be fixed for the percentage of fat, separately, for the various feeding stuffs—and none below ought to be sold—and the same for protein. Oil cake, for instance, varied from 10 to 20 per cent. in fatty matter, according to the amount of pressure used in the manufacture, and as the fat is not only valuable in itself, but an aid to the animal in digesting the other ingredients, it was really the most important element to be taken into account when estimating the value of a feeding stuff. A higher percentage of fat might therefore be paid for on a sliding scale, on the system which has proved so successful in the sugar industry. In Germany and Austria the agricultural experimental stations and tories allowed a latitude of 1½ per cent. for protein tests, and cent. for fat tests, as a margin for errors in testing. It would cult to formulate the exact extent to which a guarantee could as to the good and healthy condition of a feeding stuff and its from foreign and injurious ingredients, but each invoice should the guarantee upon which the article was sold. The neces microscopical and bacteriological examination of feeding stuff the greatest importance. It certainly should be punishable b offer as feeding stuffs articles containing from 30 to 40 per materials not only valueless for nutrition, but which, through use, would counteract the effect of, or destroy altogether, the juice, and harden the organs of digestion.

In introducing the discussion which followed, the chairman bill was an excellent one in its intention, but there would be di in defining exactly what constituted impurities, and also to d the relative quantities of constituent parts. At the conclusio of thanks was accorded to the lecturer and chairman.

AMERICAN ANTHRACITE IN 1891.

WHATEVER action the new coal combination in the States may eventually take as regards prices, there little doubt but that the production of anthracite coal in the vania fields will be considerably reduced this spring. Last ye season of unexampled production in the anthracite region, th being 40,446,336 tons, or 4,592,161 tons in excess of 1890. of coal upon the market that resulted from this activity, and t paratively small demand during the earlier winter months, le sharp cut in prices, with the threats of a coal war that for the weeks have exercised such a disturbing influence upon the N Stock Exchange. F.O.B. prices in New York showed a drop 30 to 65 cents per ton as compared with rates ruling in Januar Towards the close of last month the best anthracite stove coal purchased at $3.50 per ton in New York, but even at that lo buyers were few and far between. Rates such as these were not very remunerative, and at a meeting of agents that to recently, it was decided to put on prices 25 cents per t decision still more important was also arrived at, namely, to l output for February to the low level of January, or 2,500,0 At this rate the total output for the year would not exceed 30 tons, or about 10,000,000 tons less than the output of 1891. the competing companies are to disregard with cynical indiffer pledges by which they have bound themselves, it is yet likely interest will induce them to restrict production for some li within the limits laid down. Taking the whole of last year t obtained for anthracite were not unremunerative, and if even th increase of 25 cents can be maintained, the producers will much to complain of. A still further advance in prices is talke and may possibly be made if the severe weather continu remembering what has happened in the past, people in New rather sceptical as to the duration of any agreement to fixed pri

That the consumption of bituminous coal in the States is far more quickly than that of anthracite is shown by the f statistics taken from a reliable source. In 1870 13,000,000 anthracite were consumed, in 1880 25,000,000, and in 1890 40, These figures show a fair increase, but in the same period of the consumption of bituminous coal advanced from 15,00 85,000,000 tons. It is clear then that anthracite is bein elbowed out of the market by its more popular competitor appears likely that the limit of consumption that was reached will not be exceeded during the present twelve months. Co the keen rivalry that exists between the companies and the i nature of the interests involved, the appended estimate of t parative production during last year is valuable.

	Tons.	Quota.	Pe cent
Reading	8,601,121	21·63	21·2
Lehigh Valley	7,220,427	18·97	17·8
Jersey Central	5,857 988	15·98	14·2
Lackawanna	6,199,048	15·54	15·3
Delaware & Hudson..	3,939,917	10·65	9·7
Pennsylvania	4,994,509	10·45	12·3
Penn. Coal.....	1,692,419	4·84	4·1
Erie.....	1,204,271	1·94	2·9
Ontario & Western ..	695,770	—	1·7
Coxe Bros.	43,882	—	·1
Total	40,448,336	100·00	100·0

From this it appears that the Reading Company's share ex fifth of the whole production, the Lehigh Valley coming afterwards the Lackawanna, Jersey Central and Pennsylva panies.

SOAP PLANTS.

By John R. Jackson.

BABLY at no period of history has soap been brought so rominently before the civilised world as at the present. The is a compound substance, and the reputation of rival soap- is due probably as much to the persistent manner in which they heir special products before the notice of the public as to any lar ingredient used in their composition. Practically, soap may to be a vegetable product, for, indirectly, vegetable substances, lly oils, enter largely into its manufacture; but, besides these, re numerous plants that possess a direct saponaceous principle. f these are well known, but we do not remember that anything en done—at least, in recent times—in this country to collate bearing on these interesting, and, in many cases, useful plants, r or more extended knowledge of which might lead to many of ecoming of some practical utility. It is true that, in 1875, or Bernardin, the late able conservateur of the museum at Melle, hent, published a little pamphlet entitled "Classification de 40 vegetaux," but, as the circulation of this contribution to the is necessarily limited, a few general notes on saponaceous will probably have some interest. These notes have been d in botanical sequence, as probably the most useful to all ed.

tice Leontopetalon, L.—An herbaceous plant belonging to the order Berberidæ, growing about a foot high, native of Asia frequent in Greece and all the islands of the Archipelago. eems to be known as to the actual detergent properties of the except that the root is stated to be used at Aleppo as a substitute .

uina polpstachya, R. and P., and *M. salcicifolia*, R. and P.— belonging to the milkwort family—Polygaleæ—known as i" in Peru; and of them Lindley says:—"The bark of the when fresh, is pounded and moulded into balls for use in . The dry bark also is detergent, and readily froths when in water. It is used by the Peruvians as a substitute for soap, ladies of Peru ascribe the beauty of their hair to the use of an of this bark. The silversmiths of Huanuco employ it also for g and polishing wrought silver."

naria officinalis, L.—This well-known plant belongs to the order Caryophylleæ, and is generally known as the "soap- or "fuller's herb." Though found in hedges, on roadsides, and s, chiefly in the South-West of England and North Wales, it is red only a naturalised plant in Britain. It is distributed Europe and West Asia, and has been introduced into the States. The leaves, when boiled or bruised in water, become eous, and were used in olden times as a substitute for soap, lly, it is said, by the mendicant friars. The lather so formed the effects of ordinary soap, readily removing grease; and, in ience of its not being affected by acids, it has been suggested might be usefully applied where soft water is not obtainable.

ophila Struthium, L.—This is generally known under the name yptian soap root." It is a native of Spain, where it is said to instead of soap for scouring. The root of *G. paniculata*, L., in Lycia, for a similar purpose; and it is also extensively sold bazaars of Western Afghanistan and North-Eastern Persia as a r washing clothes. The powdered roots of this species, mixed ney, are used as food by the people of Lycia. Dr. Fluckiger ently shown that *G. Arrostii*, Gussone, yields Sicilian soap root, s of which have been collected in Catania. The following of *Gypsophila* are also included in Professor Bernardin's list as ing saponaceous roots: *G. acutifolia*, Fisch., Eastern Europe beria; *G. altissima*, L., Siberia, and *G. fastigiata*, L., described "saponaire" of Spain; and, besides these, the following plants ng to the same natural order—*Lychnis chalcedonica*, L., known ce and Portugal as the "Croix de Malthe"; in Italy as the e de Cavaliere"; and in Spain as the "Croix de Jerusalem" tated to be used as soap in Tartary. *Lychnis dioica*, L., a of the South of Europe, is used at Pesth for washing.

uthophyllum macrodon. Edgew.—This is a very spiny, tufted, eous plant belonging to the same order—Caryophylleæ—found and Afghanistan. The root stock, under the name of "Bekh" e which is also applied in Afghanistan to *Gypsophila paniculata*), as a soap substitute for washing clothes, woollens, etc., and is all the bazaars of the larger villages.

lanceolata, Retz.—It is stated that this malvaceous plant is as the "broom plant" in Brazil, and that a soap is made of the

nsonia digitata, L.—This is the well-known "Baobab" of West al Africa, and belongs to the tribe Bombaceæ, of the natural Malvaceæ. The ashes of the fruit are boiled with rancid palm d are said to form an excellent soap, in Africa.

Balanites ægyptiaca, Delile.—This plant, which is a shrub or small tree, is known as "Soump" in Senegal, and belongs to the natural order Simarubeæ. The young fruits are purgative, and when ripe are edible, and formed into an intoxicating drink by the natives of the West coast of Africa. Bernardin says the roots are saponaceous.

Æsculus Pavia, L.—The American horse chestnut or buckeye. The roots of this tree are said to be preferred even to soap for washing and whitening woollens, blankets, and dyed cottons, the colours of which are improved by the process. Satins washed in this manner, and carefully ironed, look almost as well as new.

Sapindus Saponaria, L.—A slender tree, native of the West Indies and Tropical America. It bears a fruit about the size of a gooseberry, composed of a thick, tough, almost horny rind, covering a hard, globose black seed. The outer covering of the fruit, if allowed to stand in water for some little time, swells and produces a lather. Browne says: "The seed vessels of this plant are very detersive and acrid. They lather freely in water, and are frequently used instead of soap, for a few of them will cleanse more linen than sixty times their weight of that composition, but they are rather too sharp, and observed to corrode or burn linen in time, and the water in which the tops or leaves have been steeped or boiled is observed to have the same quality in some degree."

S. Mukorossi, Gærtn.—This species is known as the "soap nut tree" of North India. It is a handsome deciduous tree, cultivated throughout North-West India, Bengal, Kumaon, Sylhet and Assam. The fruit, which is somewhat similar to that of the last named species, but considerably larger, is very much used in India as a substitute for soap, for which purpose it is also exported. It is chiefly used for washing silk and woollen cloth, being regarded as superior to soap by native manufacturers.

S. trifoliatus, L.—A large tree of Bengal, South India and Ceylon, and often cultivated. It is known as the "soap nut tree" of South India, and its seed vessels are used for a similar purpose to the last named species.

Colubrina asiatica, Brongn.—A large shrub or small tree of Tropical Asia, Queensland, Northern Australia and extending into the Pacific islands. It belongs to the natural order Rhamneæ. Seeman says that Fijians use the leaves in the preparation of a hair-wash to destroy vermin.

(To be continued.)

SCIENTIFIC PEARL MAKING.

AN ingenious American has applied for a patent for making real pearls by artificial means. The material of which the oyster makes its pearl is certainly cheap and plentiful enough. If you take the shell of a pearl oyster and scrape or grind off the outer coat you find a sheet of about one-eighth of an inch in thickness of the precise substance which the oyster deposits around any foreign body, as a grain of sand, etc., which gets caught under its mantle, thus producing the pearl of commerce. Why not, says the experimentalist, take this sheet of nacre, dissolve it in acid, and then reposit the pearl in layers about a shot or a pea suspended in the solution, thus copying the processes of Nature?

Unfortunately the pearls thus obtained are mere lumps of carbonate of lime, which entirely lack the iridescence which in the pearl is due to structure This little difficulty has always stood in the way of the successful imitation of the oyster's production; but this latest inventor claims that he has entirely overcome it.

Whether the claim will or will not be made good in practice remains to be proved. A possibly easier and more certain mode of pearl production is indicated by an extraordinary treasure which was lately shown at the Smithsonian Institute. This was a pearl, the size of a pigeon's egg, of an exquisite rose colour, and the receptacle containing it was the original fresh water mussel in which it had been formed. The nucleus of this gem beyond compare was nothing more nor less than an oval lump of beeswax, which had been placed a few years ago between the valves of the mollusc, which, to protect itself from the irritation caused by the presence of the foreign body, at once proceeded laboriously to coat it with the pink nacre it secreted for lining its shell. The mussel was kept in an aquarium while engaged in its lengthy task. It belongs to a species common in American rivers, and it is suggested that the success of the experiment opens to everybody the possibility of establishing a small pearl factory for himself by keeping a tank full of tame mussels and humbugging them into making "great pink pearls" for him.

This latter method certainly seems more promising and feasible than the former, but despite the existence of both, we do not think there is any great fear of the value of pearls (which has lately been enchanced by their scarcity) being seriously affected thereby.

TESTS FOR TURPENTINE.

MESSRS. John Lucas and Co., proprietors of the Gibbsboro Paint Works, Philadelphia, have recently published a card giving tests to determine the purity of turpentine, which we reproduce below.

TURPENTINE.

Colour—crystal clear and water white.
Commercial weight—7 lb. to gallon.
Boiling point—160 to 165° C. (320 to 340° F.)
Specific gravity—at 12° C. (60° F.) 31° Baume (0·875)
Usual adulterants are: 1. Rosin oil. 2. Petroleum benzene (or naphtha). 3. Head light oil (150° test.)

TESTS.

Rosin oil if present, will retard evaporation. Its presence in any considerable quantity may be detected by allowing the turps to evaporate from a small dish or open cup, when the adulterant will remain as a sticky resinous oil, with very characteristic resin odour if ignited.

Benzene (or naphtha) shows itself generally by its characteristic odour and rapid evaporation. Tested with the hydrometer 5% of this adulterant will make a difference of 1½° Baume.

Pure turps @ 15° C. is 31° Baume.
5% benzene ,, ,, 32½° ,,
15% ,, ,, ,, 34° ,,
25% ,, ,, ,, 38° ,,

Headlight oil. (Petroleum, paraffine oils, etc.) These adulterants retard evaporation, and can usually be detected by the delicate "bluish bloom" or smoky bluish-yellow cloud they impart to the turps.

[a] To detect small quantities of these adulterants, fill two white glass vials, bottles or tumblers (the longer the better), one with pure spirits turps, one with the doubtful article; hold both over a piece of black paper, and look directly down into the liquid. 3 to 5% of any petroleum will impart a decided bloom or cloud to the turps.

[b] Test with hydrometer, 5% of headlight oil will make a difference of ½° Baume.

Pure turps at 15° C. is 31° Baume.
5% headlight oil 15° C. is 31½° B.
10% ,, ,, ,, ,, 32° ,,
25% ,, ,, ,, ,, 34° ,,
33½% ,, ,, ,, ,, 35½° ,,

THE ADVANCE OF ELECTRICITY.

MR. NIKOLA TESLA, the young but distinguished electrician from America, who is now in this country, lectured recently, by invitation, at the Royal Institution before an extraordinary meeting of the Institutionof Electrical Engineers. Mr. Tesla became known to fame in both hemispheres as the inventor of the first alternate-current electric motor—that is to say, a motor which transforms currents rapidly changing their direction to and fro into mechanical power. In this apparatus the field magnets rotate, and as there are neither brushes nor commutator, it requires very little attention. The recent experiments between Lauffen and Frankfort-on-the-Main, in which power was transmitted over a bare wire a distance of 110 miles, were made with the help of Tesla's motor, and it is rapidly being introduced in America. His remarkable experiments with alternate or see-saw currents of high potential—that is to say, "pressure"—and high frequency, or, in other words, rapid changes of direction, are the most important advances which have been made in electrical science for a considerable time, and may be regarded as a new departure. While of great theoretical interest, they also point to the possibility of a new mode of artificial illumination.

The beautiful experiments of Mr. Crookes tended to confirm this supposition, and now those of Mr. Tesla almost realise it. The currents he employs are derived from an alternating current dynamo of special device, carrying nearly 400 electro-magnets, driven at some 2,000 revolutions per minute, and supplying a current alternating 20,000 times or more per second. Currents of still higher frequency and potential are obtained by passing the spark or disruptive discharge from a battery of Leyden jars through the primary circuit of an induction coil. Thanks to the high potential and oscillatory character of the Leyden jar discharge, currents having a frequency of one or two million times a second, and of enormously high potential, can be had in this way from small induction coils. When such a current is passed through a bare wire it is seen to glow in the dark, and sheets of light are visible passing between two wires connected to the poles of the generator.

It is a remarkable fact that currents of these extremely high potentials appear to be absolutely without effect upon the human organism. Taking an iron bar in one hand and a vacuum tube in the o lecturer made his body a portion of the circuit by placing the the bar upon a terminal, emitting sparks several inches lon vacuum tube glowed brilliantly, while the lecturer remained unaffected. Such an experiment could not be attempted v currents to which we have been accustomed.

Mr. Tesla's results have led him to conclude that air at pressures is as easily traversed by these peculiar currents as air by the currents of the ordinary induction coil. The lightn charge being supposed to be oscillatory, like the spark from a jar, the air between the charged cloud and the earth is easily Moreover, as Mr. Tesla shows, these currents so agitate the ai beating upon a metal body it makes the latter incandescent, a vation which accounts for the fact that detached masses of met as watches in the pocket, are sometimes fused in thunderstorm

Another curious fact follows from these experiments. It is to work an electric motor by connecting it to the generator single wire—that is to say, connecting one pole of the moto pole of the generator and leaving the others free. In tran power by these currents the efficiency of the conducting line increased by an electrostatic screen, which may convenientl outer jacket of lead.

Mr. Tesla has also succeeded in making the little vanes or Crooke's radiometer rotate by simply exposing the instrume metal ball charged with these currents; but the vanes revolv opposite direction to what they do when exposed to the radi heat. In one of his bulbs he has been able to make the lumine itself revolve, and finds that it is then so sensitive to magnetis small bar magnet held 8ft. away affects it visibly; but whethe conjectures, this phenomenon may be useful in augmenting th of telegraphing through ocean cables remains to be seen. appears from Mr. Tesla's observations that when we are deali alternating currents of very high potential and frequency the p vibration cannot be calculated with any precision owing to the tion of the energy in molecular bombardment of the air, and con change in the capacity from which, together with the self-in the period is estimated.

PLATE GLASS MANUFACTURE IN BELG

ACCORDING to the latest published statistics (1888), there active operation in the Kingdom of Belgium 64 factories furnaces manufacturing glass of all kinds, employing 17,240 w The value of the yearly production was 35,765,000 francs.

In the consular district of Brussels there are eight plate glas factories, as follows: Societie Anonyme of Floreffe, at F Societe Anonyme of Monstier, sur Sambre; Societe Anonyme o lais, sur Sambre; Societe Anonyme of St. Roch, at A Societe Anonyme of St. Marie d' Origines, at Tamines; Anonyme of Hainaut, at Roux; Societe Anonyme of Chor Roux; Societe Anonyme of Courcelles, at Courcelles.

The average monthly production of each manufactory is square metres. The average monthly production of the eigh factories is 100,000 square metres, and per year, 1,200,000 metres, or 12,000,000 square feet, English measurement.

Crystal and mirror plate glass is not manufactured in this district, but is largely imported from Furth, Germany.

Ninety per cent. of the crystal and mirror glass is made fro window glass, which is first made into thick cylinders, wh smoothed and polished by machinery until the desired thic obtained, which varies from one-eighth to three-sixteenths of an

The method employed in this district for grinding, smoothi polishing plate glass is as follows:

The glass, when taken from the furnace, is spread upon a c table; the mass is then rolled into sheets of from 9 to 10, and to 16 millimetres in thickness. The former is designated as th the latter as thick, plate glass. This operation constitutes known as rolling, and the glass thus produced is called roug After the glass has been completely cooled, it is placed upon c tables, upon which a bed of plaster of Paris has been pre receive and firmly hold the glass in place. Particular care is e in filling in the spaces between the glass and the table with the so as to securely seal the glass to the table. It then passes thr series of grinding and smoothing until the thickness is reduced t one-fourth, and the face of the glass has been thoroughly polish is removed from the table, turned, replaced and polished in th manner as above described.

The operation of smoothing and polishing costs 6.50 francs per square metre. The cost of the rough glass is 7.50 francs per square metre. The total cost of glass when finished to a able condition is 14 francs ($2.70) per square metre (10¾ English

Parliamentary Jottings.

THE HOUSE OF LORDS.

SMOKE NUISANCE (METROPOLIS) BILL.

Lord Stratheden and Campbell, in moving the second reading of this Bill, on Thursday, last week, said that, in consequence of the fogs a good deal of attention has been called to this subject. The noble marquis at the head of the Government, and the noble viscount opposite had expressed a few days ago contrary opinions as to the possibility of removing fogs. He himself thought it would be possible to remove the solid globules, but not to deal altogether effectually with the fogs, which were caused by exhalations from the river and the low grounds. The measure was as far as possible in the form in which a similar Bill had left the Select Committee of their lordships' House in 1887. The executive authority under the Bill would be exercised by the vestries, but the Local Government Board would have power to compel inert vestries to act. The Bill gave the vestries no power to enter private houses, and every person would have the right to use what form of fire-grate and fuel he chose, provided the principle that the public air should not be contaminated by smoke was carried out. In his opinion it was only through the use of bituminous coal for the last two centuries that the public mind had become demoralized on this subject. He thought that the difficulty of the consuming of smoke might be easily overcome by the use of anthracite coal, of which vast stores existed in Wales, and coke. The effect of the Bill would be to regulate domestic as well as industrial smoke. He believed that unless something was done to improve the air of the Metropolis, it might not, in the course or a few years, be easy to maintain it as a capital. His object was that the Bill should go before Committee in order that its clauses might be freely canvassed, and that the measure might be made as effective as possible, and he concluded by moving the second reading.

The Duke of Westminster, in supporting the motion, said the object of the Bill, the principles of which had been affirmed on a previous occasion, were two-fold. It was to enable sanitary authorities to make bye-laws for abating or regulating smoke in houses and buildings. The machinery of the Bill would be identical with that of the Public Health Act of last year, and might apply to the same extened area, in which there was a great deal of smoke emitted. The evil of smoke was increasing greatly every year, concurrently with the increase of population and new houses. The Bill, by the prevention of smoke, would also greatly benefit London in respect to fogs, which were made worse by the increase of smoke. In 1887, the number of fog days registered was 93; in 1888 the number was 119; in 1889 it was 151; and in 1890 the number was 156. Those facts showed how great was the evil, and therefore how necessary was a measure of that character. The owners of industrial buildings were compelled to consume their own smoke, and it was a little unfair to them that the owners of some domestic chimneys, who were greater offenders, were able to offend with impunity. He had received a letter from Mr. Brunner, M.P., who informed him that his firm derived a profit from the deposit of sulphite of ammonia, which resulted from the consumption of smoke. It might therefore be an advantage principally to the householder to be made to consume his own smoke. (Hear.)

The Marquis of Salisbury said he did not rise for the purpose of opposing the second reading of the Bill, but although he did not oppose the Bill, he could not give any pledge as to what action the Government would take in the further stages of the measure. He could not help feeling that the noble duke had indulged in too sanguine hopes in regard to this legislation. His own opinion was that the results would not be very large, even if it was possible to carry out the measure in practice, and if the results were not large, he did not think they would be repaid by the disadvantages of a flameless fire. He was a little alarmed at the proposal of the noble duke that they should recoup themselves for the outlay by the manufacture of sulphite of ammonia in their own houses. He did not know whether the noble duke was familiar with the peculiarities of that drug, but it smelt more exactly like a drain than anything else he knew of. (Laughter.) He was afraid that this would hardly lead to very much support of the measure. He was, however, prepared to assent to the suggestion that their lordships should read the Bill a second time, and then refer it to Lord Midleton's Committee as soon as it was appointed. (Hear, hear.)

The Bill was read a second time.

NEW BILL.

Mr. Atherley Jones brought in a bill to amend the law relating to employers' liability.

Selected Correspondence.

INFLAMMABLE BUTTONS.

To the Editor of the Times.

Sir,—We have all heard of the danger attending the use of the combination of guncotton with camphor when made into billiard balls, combs, collars and cuffs, etc., in imitation of ivory, tortoiseshell, or imaginary natural productions; we all know that this invention of the chemist is highly inflammable, but I do not think many realise that articles made of this material are liable to what is for all practical purposes spontaneous combustion.

I have received a letter from the West of England describing "a most extraordinary adventure of a lady, who was standing near a bright but not blazing fire." She found herself suddenly enveloped in smoke, and a gentleman who rescued her and crushed the ignited portion of her dress had his hand badly burned. The fire was found to have originated from a spot where a large fancy button had been, but which had now disappeared, while a similar button on the dress was scorched. The following rough and ready tests of one of the buttons which was enclosed in the letter are sufficient to show the danger of this style of ornament:—

A gas flame was directed against one side of an iron ring, the head of a common wax match containing phosphorus was placed on the ring about two inches from the flame, and a piece of the button was similarly placed at an equal distance on the other side. A second piece of the button was also placed on the ring, but at twice the distance from the flame. A small piece of paper was laid lightly over each. After five minutes the first piece of the button ignited and burned with a bright flame; after 12 minutes the second piece did the same; while, after 17 minutes, the match head was still unchanged. On testing it with a light it immediately burst into flame. A third piece of the button was pinned to the surface of an old duster, which for the purpose of the test was equivalent to a dress, and the duster was hung from a chair in front of an ordinary bright fire, but outside the fender and at a distance at which the skirts of a dress might any day be found. In two or three minutes there was a cloud of smoke and a hole was burned in the duster.

It is quite unnecessary to point out the obvious conclusion; but it may be worth while to put people on their guard against buttons looking like horn or tortoiseshell which smell strongly of camphor when rubbed upon cloth.

Yours obediently,

Royal College of Science, London. C. V. Boys.

Correspondence.

**** We do not hold ourselves responsible for the opinions expressed by our correspondents.*

ANSWERS TO CORRESPONDENTS.

J. W. (Frizinghall).—Two Bunsen Cells are generally used. We should advise you to try one of C. G. Moor's (21, Market-street, Penistone), which are designed for laboratory use. It is described in No. 247 of this journal. "Electrolysis," by Fontain and Berly, should be useful to you.

W. F.—Yes, it has been used in conjunction with straw. We are not prepared to speak as to its success however.

R. P. R. (New York).—Thanks for your letter and information. We are sorry you could not see your way to accede to our proposal.

H. & Co.—Your communication duly to hand, it shall have our early attention.

J. M.—See this week's issue. It has not been taken intact.

K. P. (Cologne).—Your letter duly received. We have sent you further information by post.

ROBURITE FUMES.

To the Editor of the Chemical Trade Journal.

Dear Sir,—I note your remarks with reference to the fumes given off by the explosive Roburite, and agree that it is a most difficult thing to make the miners believe the fact which has been clearly demonstrated by two independent commissions, acting on their own behalf, namely, the Lancashire Association, and the Durham Miners' Association, that the resultant gases from the explosion of Roburite are perfectly harmless. I was present during the whole of the inquest, and can say that not one atom of evidence was forthcoming to show that the man was affected in any way by the gases, in fact it was clearly proved that no gases could have been left. When the shot was fired there was an air current of four thousand cubic feet of air blowing right on to the face of the coal per minute, and the deceased never approached the place

until six minutes had elapsed. At this time the fireman proved that no fumes were left and there was no smell of any kind. In order to explain the verdict one must remember that the case was tried by an Atherton jury who naturally felt much sympathy for the widow and children, and that on their decision depended whether the family should be placed on the Permanent Relief Fund. Another point which is worth noting is, that although questions were asked regarding this explosive so as to prejudice the jury, yet no scientific evidence was allowed to be given in answer to these questions, or to explain in any way what gases might be present. The Dr. Martin who signed the death certificate could give no information as to what gases might have been inhaled, or even what gases might have caused inflammation of the brain. He had heard that a shot of Roburite had been fired, the first in the pit by the way, and without any evidence immediately connected the death with this circumstance. Dr. Martin made a post-mortem examination three days after death and then reserved portions of the body for the analysis of any gases that might have been inhaled. Dr. Paul, who made the analysis, found nothing, and it was certainly begging the question when he was asked whether ni:ro-benzol or aniline might not possibly have brought on the complaint. Dr. Paul would not commit himself so far as to say that it was not a possible case, but stated emphatically that such a circumstance had never been recorded. Considering the millions of Roburite shots that have been fired, a large proportion of which being in places where there is hardly any ventilation whatever, the workmen breathing the fumes immediately without any harm, I leave it to your readers to decide whether outside influence and prejudice are not responsible for this extraordinary verdict.

I am, yours, &c.,
WM. JAS. ORSMAN, F.I.C., F.C.S.
Chemist to the Roburite Explosives Co., Ltd.

Reports of Companies.

DIVIDENDS.

The report of the directors of the Roburite Explosives Company (Limited) for the half-year ending December 31, 1891, states that, after providing for all necessary charges (including the cost of reconstruction) the nett profits for the half-year amount to £2,988. The directors recommend the payment of the full dividend for the half-year on the preference shares at the rate of 5 per cent. per annum, carrying forward a balance of £362. to the next account. The progress of the company has fully justified the anticipations of the consultative committee, as reported to the shareholders in April last.

WINDING-UP NOTICES.

THE AUSTRALASIAN ALKALINE REDUCTION AND SMELTING SYNDICATE (LIMITED).—This company was registered on October 26th, 1889, and was formed for the purpose of acquiring the rights of an alkaline process for treating ores owned by the Alkaline Reduction Syndicate (Limited) for Australia, and for forming sub-companies to work the same. Under a winding-up order made on December 19 last, a statement of affairs has been submitted by the secretary and two of the directors of the company showing liabilities £2,354. without available assets, and as regards contributories, a total deficiency of £29,354. From the observations of the Official Receiver (Mr. C. J. Stewart), it appears that, one of the company's shareholders having failed to carry out an agreement to form a sub-company for Australia, the company, early in 1890, accepted from him as compensation for the breach £7,500. in cash (which was expended in the payment of a dividend to the shareholders at the rate of 25 per cent.), and subsequently 7,000 of its shares then held by him. The insolvency of the company is attributed to the want of sufficient working capital, of which, to a great extent, they were deprived by the distribution in dividend of the £7,000., which was required and should have been retained for the development of the properties.

THE ALPINE CONDENSED MILK COMPANY (LIMITED).—Under a winding-up order made against this company on November 28 last, a statement of affairs has been submitted (on certain points with reservation) by the secretary, the late secretary, and four of the directors, showing liabilities £5,944. of which £3,570. are unsecured, with assets estimated to produce £1,826., subject to cost of liquidation. It appears that the company was registered on May 9, 1891, and was formed for the purpose of acquiring freehold lands, buildings, factory, and premises (known as the Alpine Swiss Condensed Milk Factory), at Avenches, Canton de Vaud, Switzerland; also the machinery, fixtures, fittings, plant, and stock thereupon, and the goodwill and trade-marks of and belonging to the business. The nominal capital of the company £15,000. divided into 15,000 shares of £1. each, of which 9,350 been issued. The Official Receiver (Mr. C. J. Stewart) states th company throughout would appear to have been crippled in its o tions by the want of working capital, and the insolvency is attribu this cause, to legal cost and expenses, and to the depreciation i value of the manufactured article in the London market. The bu of the company has been carried on at 5, Philpot-lane, London, and at Avenches, Switzerland. The Official Receiver further a that the company has not kept proper books of account, and the r of its transactions is in many respects very incomplete, and tha desirability of applying for a public examination of vendors and is being considered.

Trade Notes.

HEAVY MARGARINE SHIPMENTS.—The heaviest cargo of marg —10,000 packages—ever imported by one vessel was landed re from the steamer Professor Bays, belonging to the Zeeland Mail S ship Company, of Flushing.

STORING ESSENTIAL OILS.—A sample of sandal wood oil exp in a zinc container was found to separate a sediment containing These observations lead to the recommendation that essentia should be kept in glass vessels only.

AN AGRICULTURAL COLLEGE FOR KENT.—The Charity missioners have given in perpetuity buildings at Wye (Kent) £10,000, for the purpose of an agricultural college for Kent, Su and Sussex.

PETROLEUM IN ASSAM.—A Calcutta telegram states that a sunk on the Assam Railway Company's petroleum grant struck oil depth of 650 ft., and is giving 700 barrels daily, and that rich in tions of further supply exist in the neighbourhood.

COOKING BY ELECTRICITY.—Some novel experiments in the plication of electricity to cooking and other domestic purposes wa made at the Crystal Palace, on Monday, before representatives press.

A CHEMICAL TESTING LABORATORY AT VIENNA.—The chemical testing laboratory in connection with the Vienna Pro Exchange was opened on the 5th ult. The laboratory, which is the direction of Herr S. Weinwurm, will carry out tests for such as cannot afford to have an expert chemist regularly on their staff

THE NETHAM CHEMICAL WORKS.—These works, situated George's, Bristol, have been reconstructed so as to increase powers of production. The re-organisation has been effected o lines of modern improvement, so that it is evident that the che industry in Bristol is endeavouring to keep *au courant* with times.

FATAL EXPLOSION OF BENZOLINE.—A blacksmith, livin Audlem, Cheshire, was soldering a large benzoline cask last which was supposed to be empty; it exploded however, infl injuries on the man's head, to which he shortly afterwards succu

THE MANUFACTURE OF COTTON SEED OIL.—Operations i manufacture of cotton seed oil continue to advance in the U States. Two new companies have been started recently to manuf this and other vegetable oils, one of these oil mills having a capacity of 30 tons.

THE UNITED ALKALI COMPANY, LIMITED.—The United Company, Limited, have closed their works at Clyde Bank. It stated that they are greatly restricting the production at their and Eglinton establishments. They have arranged with an firm to control the production of bleaching powder.

ASBESTOS PORCELAIN.—F. Garros describes a novel por which he has obtained by grinding asbestos to an impalpable po removing iron, &c, if necessary, by treatment with hydrochloric making the powder into a paste with water, and baking it in a por furnace for 18 hours at 1,200°. The porcelain thus produced m used for the filtration and sterilisation of liquids.

EXTRACTING GROUND-NUT OIL.—Ground-nut oil is express Formosa something after the fashion in which cocoanut oil is exp by the natives. One hundred weight of nuts gives about 25 lb. worth 30s. The oil, which is in great demand, is used as an arti food and for lighting purposes. The leaves and stalks of the form a nutritious cattle food and a good green manure.

EXPLOSION AT A SOAP WORKS.—Last week an explosion oc at Thompson's Soap Works, Burnley. The boiler was blown th the roof, and fell on to the Cross Keys Hotel, across the river. boiler, which is not a large one, crashed through the stone roof hotel and wrecked the upper part of the building. The soap were also much damaged.

New Chemical Works.—It is now an ascertained fact that chemical rks are to be established close to the existing salt works, several es beyond Fleetwood, and the erection of the requisite buildings is rected to be commenced immediately. It is computed that employ- nt will be afforded to 1,000 workmen.

The German Alkali Trade.—The alkali syndicate report a d trade during the past year. The actual profits amount to 11,764 mks. The trade in manufactured material amounted to ,409 cwts. 80 per cent. chlorate of lime, 93,647 cwts. sulphate of e, 121,718 cwts. as manure salt, 48,231 kieserit and 95,543 cwts. nide. Again it has been agriculture both at home and abroad which l to this increase in production. The syndicate intend this year to chase the alkali works at Leopoldshall-Stassfurt.

To English Alkali Manufacturers.—The Pennsylvanian Salt nufacturing Company, of Pittsburg, U.S.A., has for some time past n noted for the superiority of its productions, including bicarbonate oda, caustic soda, and alum, and it is stated that owing to the erior quality of their manufactures, the prejudice hitherto existing avour of English bicarbonate of soda has been largely overcome, firm being almost overtaxed with the demand for this commodity.

The Manufacture of Pigments.—The American Zinc Lead mpany has purchased the patents of Dr. Bartlett for the manufacture new combined zinc lead paint. It is claimed that the process ich is adopted causes a more perfect combination during the manu- ure than can be obtained by any mingling of lead and zinc made arately, and when the paint is ground in oil it will not separate, n a cake, or make a sediment.

Manufacturers and their Smoke.—It may be to the interest hose who are so fond of expressing the opinion that manufacturers little or nothing towards abating the smoke nuisance, to learn that ssrs. Brunner, Mond, and Co., Ltd , one of the largest firms of ali makers existent, and presumably, therefore, the greatest offend- , are at least not quite such incorrigible producers of malignant and ky vapours as their fellow brethren are made out to be. Messrs. rner, Mond, and Co., burn their coal with a forced draught, wash resulting gases with a water-spray, thereby depositing the sooty ticles, and dissolving out the ammonia and sulphur-dioxide fumes, ich are recovered under favourable conditions at a profit.

The Glass Bottle Trade.—The glass bottle trade in St. Helens pears to be suffering from the general depression, as Messrs. Can- gton, Shaw & Co. have given notice of their intention to work short e at their extensive factory, which is the largest glass bottle works in world. A deputation of the employés waited upon the firm, and imately a satisfactory arrangement was made between the men and ir employers. Messrs. Cannington, Shaw & Co. intimated that if y had enough storage room they would have been willing to continue full work, and wait the revival of trade.

Soap for Dry Cleaning.—An American contemporary recom- nds the following for preparing a soap for effecting that useful pro- ss for removing stains known amongst dyers and cleaners as *Etoyage à sec*. The ingredients taken are:—Cocoanut oil, 30 kilo- ams; soda lye, 38° B, 15 kilograms; potash lye, 20° B, 5 kilograms; brilliant" green, 200 gm.; oil of turpentine, purified, 800 gm.; ely pulverized clay, 26 kilograms. The clay (kaolin), finely sifted, first placed in the vat. The colouring matter ("brilliant" green) is bbed up with a portion of the oil, and the balance of the latter ured in upon the clay, and the two intimately mixed. The coloured il is next added and all well stirred together. Mix the two lkaline solutions and pour them in a strong stream into the mixture of il and clay, agitating the latter constantly. Finally, add the turpen- ine under constant stirring. The resultant soap is poured into metallic oxes and closely covered. Grease spots in garments are first covered with a little of the paste, well rubbed in. Sponging with warm water fterward removes soap and spot in the most complete manner.

Obituary.—The highly esteemed Professor of Chemistry at the Heidelberg University, Dr. Hermann Kopp, has died in that city at the age of 75. He was born at Hanau, and after studying at Marburg he went to Giessen to work under Liebig. He afterwards worked in conjunction with Liebig and Bunsen, and was on the closest terms of friendship with the latter. Kopp devoted himself chiefly to the history of chemistry, on which his work in four volumes remains a standard of authority. He did not neglect recent research, and edited, along with Liebig and Will, the "Annual of the Progress of Chemistry," and, with Wöhler, the "Annals of Chemistry." Since 1871 he has lived in retirement.

We also regret having to chronicle the death of Professor Dittmar, of Anderson's College, Glasgow. He was born at Umstadt, near Darmstadt, which was the birth place of Liebig. He was first invited here by Sir H. Roscoe. As chief assistant to Sir Lyon Playfair he was the teacher of Professor Dewar. He held the Chair of Practical Chemistry at Owens College for a short time between the years 1872 and 1873, when he was appointed to the Chair at Glasgow.

SALFORD GAS.

The illuminating power is expressed in standard candles; the ammonia and total sulphur in grains per 100 cubic feet. The carbonic acid is calculated to volumes per cent. The determinations have all been made on the gas supply to the Manchester Technical Laboratory, 32, Blackfriars-street.

Date. 1892.	Illuminating power.	Ammonia.	Total sulphur.	Carbonic acid.
Feb. 25	15·6	0·03	20 02	0·96
,, 26	16·3	0·06	19·73	0·84
,, 27	16·5	0·07	26 66	0·82
,, 29	15·0	Nil.	25·03	1·00
Mar. 1	16·7	Nil.	18 66	0·91
,, 2	16·1	0·03	14·32	0·76
,, 3	16·3	Nil.	13·50	1·18
,, 4	16·2	Nil.	27·73	1·05
,, 5	15·0	0·06	29·11	0·96
,, 7	15 2	0·09	19·25	1·23
,, 8	14·9	Nil.	18·64	1·00
,, 9	15·3	Nil.	13·98	1·10

Market Reports.

TAR AND AMMONIA PRODUCTS.

Benzol is again a shade lower and 90's can be bought at 2s. 3d., while at the same time 50-90's cannot be worth more than 1s 9d. In anthracene, a few small transactions have taken place in 30% B at under 9d. There is, however, very little demand for the article and stocks are beginning to accumulate not only in London, but also in some ports of the provinces. The nominal quotation for 30% A remains about 1s. Business in pitch remains brisk and prices unaltered.

There seems to be a slightly better tone in the sulphate of ammonia market, but in consequence of the action of the dealers it is impossible to obtain fair values. Quotations are being made abroad, which are not even on a parity with the lowest quotations on this side, and the speculators act as if a recovery was an impossibility, but this will probably be upset when milder weather sets in. In the meantime, business is being done at £10. 5s. Leith and Hull, and £10 2s. 6d. Liverpool. Beckton price may be put down at £10. 2s. 6d., while outside London makes are fetching £10. 6s. 3d. to £10. 7s. 6d.

MISCELLANEOUS CHEMICAL MARKET.

The demand continues fairly brisk in all branches of the alkali trade. There are no changes to report in values of caustic soda or soda ash. These remain as for some time past, viz.: F.o.b. Tyne, 77% £11. 5s.; f.o.b. Liverpool, 74%, £11. 5s.; 70%, £10. 5s.; 60%, £9. 5s.; Cream, 60%, £8. 17s. 6d., in 10 ton lots and upwards. Soda ash, 1¾d. per degree, with good demand for "Leblanc" makes. Soda crystals without change. Bicarbonate of soda, £6. 12s. 6d., f.o.b. Bleaching powder continues to find a steady outlet at £7. 10s. f.o r. at makers' works. Chlorate of potash advanced to 7d. per lb., though some resales on the market have been obtained during the week at 6¾d. Chlorate of soda firm at 7¼d. to 7½d. There is a firmer market in sulphur, owing to advance in prices of Sicilian. Recovered sulphur still scarce for early delivery. For forward delivery the price remains at £5. 15s. f.o r. makers' works. Acetates of all kinds continue low in values. For lead salts there is small demand. Tartaric acid has fallen below the shilling. Oxalic acid still dull and quoted at 3d. per lb., with varying discounts. Bichromates without movement or change in price. Prussiate of potash firm at 10¾d. Sulphocyanides quiet. White powdered arsenic selling at £10. 15s. to £11. at usual points. Carbolic acid crystals without improvement. General trade in chemicals is reported dull from many quarters.

REPORT ON MANURE MATERIAL.

There has been more doing during the past week but for the time of the year, business is unusually slow, probably the inclement weather has something to do with retarding orders which usually come in February or early in March.

In mineral phosphates the tendency is still towards lower prices, and for 75/80% Florida Rock, 8½d. must now be considered nearest market value. For any large lines of peace River Rock, 7½d. would probably have to be accepted, and it is doubtful whether much more could be got for hot-air dried Bull River, summer shipment. The lower grades of Somme, Osso and Belgium phosphates are freely offered at easy prices, but for the higher grades relatively high prices are required, having regard to the present values of Florida and Bull River rocks.

We do not hear of any business in River plate cargoes of bones. For summer shipments there are buyers of large lines at £4. 2s. 6d., but no sellers. For anything afloat, £4. 2s. 6d. would likely be accepted. Shipments of crushed Kurrachee bones are stopped for the present by the higher prices demanded, sellers now refusing to accept under £4. 7s. 6d. per ton, ex quay Liverpool. £4. 5s. refused for East Indian bone meal in large lines—£4. 7s. 6d. required, which buyers meantime refuse to give. There have been sales of good clean parcels of Charring bones at £4. 2s. 6d. to £4. 3s. 9d. per ton, and of parcels not quite so good at £4. per ton, ex quay Liverpool.

Nitrate of soda is very quiet at 9s. 4½d. on spot, 9s. 4½d. is full value for due cargoes, and December shipments cannot be quoted over 9s. 4½d. to 9s. 5¼d. according to size and test.

There have been further sales of home prepared dried blood at 9s. 6d. per unit, f.o.r. at works, and of fish guano at £5. 8s. 9d. per ton, in bulk, nett cash, ex store on Mersey. Kainit sells readily at 45s. per ton, nett cash, in bags, ex quay Liverpool. Superphosphates unchanged.

THE METAL MARKETS.

LONDON, Wednesday.—Pig iron steady; Scotch warrants closed at 40s. 5d. cash and 40s. 8d. one month. Middlesbrough 35s. 7d. cash, and Hematite 45s. 7d. cash. Copper, active. Chili bars, G.O.B.'s and G.M.B.'s closed at £45 7s. 6d. to £45. 12s. 6d. cash, and £45. 17s. 6d. to £46. 5s. three months. Tin quiet: Straits closed at £89. 2s. 6d. to £89. 10s. cash, and £89. 7s. 6d. to £89. 17s. 6d three months. Australian, £89. 7s. 6d. cash; English ingot, £92. 10s. to £93. Lead steady; Spanish, £10. 16s. 3d.; English, £10. 7s 6d. to £11. Silesian spelter, ordinary, £21. 2s. 6d. Quicksilver: First and second hands, £7. 2s 6d. Copper shares rising: Cape 1¾ to 1⅞; Copiapo $2\frac{13}{16}$ to $2\frac{15}{16}$; Libiola $3\frac{1}{16}$ to $3\frac{3}{16}$; Mason and Barry $4\frac{13}{16}$ to $4\frac{15}{16}$; Rio Tinto $17\frac{5}{16}$ to $17\frac{7}{16}$; Tharsis $5\frac{13}{16}$ to $5\frac{15}{16}$; Namaqua $1\frac{7}{16}$ to $1\frac{9}{16}$; Panulcillo $\frac{13}{16}$ to $\frac{15}{16}$.

GLASGOW, Wednesday.—Market flat, with good business. No Scotch done; closing wtth buyers at 40s. 4½d. cash, sellers ask 40s. 7d. Middlesborough done at 35s. 9d. 23 days, also at 36s. 1½d. and 35s. 10d. one month; closing with buyers at 35s. 7½d. cash, sellers ask 35s. 8d. Hematite done at 45s. 11d. and 45s. 7½d. cash, also at 46s. 2d. and 45s. 10d. one month; closing with buyers at 45s. 7d. cash and 45s. 9d. one month, sellers ask 45s. 7½d. cash.

WOLVERHAMPTON, Wednesday.—The market to-day was fully as strong as last week for immediate supplies of iron since the coal strike may hinder regular production, but there was little demand. Iron consumers declined to respond to makers' suggestions to purchase, and the market was flat. Sheets, singles, £7.; doubles, £7. 5s. to £7. 10s.; lattens, £8. 5s.; marked bars, £8.; merchant sorts, £6. 10s.; common, £6.; hoops, £6. 12s. 6d.; strips, £6. 7s. 6d. Pigs, quiet sale. Derbyshires, 46s.; Northamptons, 45s.

THE LIVERPOOL OIL AND COLOUR MARKET.

LIVERPOOL, Wednesday.

OILS.—Palm oil continues quiet. There have been more sales this week and at better prices. Lagos being quoted at £21. 15s. per ton on spot and £22. to arrive. Benin, £20. 5s. In olive the quiet tone still prevails. There is practically no business doing. Prices still range from £34. to £39. per ton, but lower prices are spoken of. Linseed though quiet has a moderate but steady demand at last week's prices, namely, 19s. 6d. to 20s. 6d. per ton in export casks. Rape refined. Stettin quiet at 33s. 6d. Cotton Seed; Liverpool refined has improved in price, and has stood at 19s. during the week, to-day it is quoted at 19s. 3d. per cwt. American is steadily held at 20s. per cwt. Castor Oil has been in better demand and is steadier in tone. Good seconds Calcutta 2⅝ to $2\frac{11}{16}$, first pressure French, 2⅞ per lb. Tallow continues dull and does not give any promise of improvement. Norths 24s. 6d. to 25s. 6d.; Souths, 26s. 6d. to 26s. 9d. Resin common has advanced to 4s. 4½d., while the higher grades have improved, experiencing an advance of 6d. to 9d. Spirits of Turpentine have declined slightly to 27s. 6d. at which price it is very steadily held. Petroleum is firm, but American is still quoted 5½d. to 6½d. according to quality. Prussian refined 4½d. per gallon.

COLOURS unchanged. Ochres: Oxfordshire, common, £10., medium, £12., best, £15.; Derbyshire, common, 40s., medium, 50s., best, 60s. Welsh, best, 70s., seconds, 50s., and common, 18s.; Irish, Devonshire, 40s. to 45s.; French, J.C., 55s. to 60s.; M.C., 65s. to 67s. 6d. Umber: Turkish quiet. Devonshire, 50s. to 55s. White lead, red lead, and oxide of zinc unchanged. Venetian red, £6. 10s. to £10. Cobalt: Prepared oxide, 10s. 6d.; black, 9s. 9d.; blue, 6s. 6d. Zaffres: No. 1, 3s. 6d.; No. 2, 2s. 6d. Oxide of iron: common, £6.; medium, £10.; finest, £20.

THE LIVERPOOL MINERAL MARKET

The market has continued firm during the week. Man Arrivals continue small, whilst stocks are very much reduced, a have been made at very much higher figures. Borate, 6¼d. sulphate, £21. 10s.; oxalate, 1s. 6d. per lb.; chloride, carbonate, £12. 10s., steady. Magnesite: Raw lump quiet somewhat better inquiry for forward delivery. Raw ground £ and calcined, £12. 10s. Bauxite (Irish Hill brand) firm at ful —lump, 20s.; seconds, 16s; and thirds, 12s. French chalk: continue small whilst a steady business is doing at full "Angel White" brand; silvery, 90s. to 92s. 6d.; prime 90s. to 95s; and superfine, 105s. Barytes:- Carbonate especially best lump at 90s. to 95s.; nuts, 70s. to 80s.; finest white sulphate is steady. "Angel White," No. 1, 70s. 60s. to 65s.; No. 3, 45s. Pumicestone steady. Iron ore: No to report in Bilbao, which is scarce on account of the strike; Ir Cumberland easy. Santander and manganiferous, there is more Emerystone: Best brands in fair demand—No. 1 lump, £5. 10s. smalls, £5. to £5. 10s. Fullers' earth quiet; best lump, 55 impalpable ground, £7.; "Emerald" ground, 80s. Sc wolfram, tungstate of soda, and tungsten metal in fair demand firm. Chrome ore of high percentages scarce, both for sp forward delivery at full figures. Antimony ore and metal more prices firmer. Asbestos very firm. Potters' lead ore of best quiet; smalls, £12. 10s. to £13. 15s; selected lump, £14 £15. 10s. Calamine easy. Strontia sulphate (celestine) Limespar unchanged, especially for English manufacture G.G.B. brand in demand at 50s. (ground). Felspar unch Fluorspar: Best quality scarce. Ferro manganese firmer, 75%, 85%, £13. 15s. Plumbago brisk. Spanish, £5.; best Ceylo at last quotations; Italian and Bohemian, £4. to £12. p "Founders," £5. to £6.; Blackwell's "Mineraline," £10. sand, 20s. to 22s. 6d. Ground mica, £45 to £50. China clay common, 18s. 6d.; good medium, 22s. 6d. to 25s.; best, 30s. (at Runcorn). Bog ore (oxide of iron) steady; finest quality, 23s.

TYNE CHEMICAL REPORT.

Tuesd

Chemicals continue steady, without very much alteration. very firm, and in demand. Bleaching powder, softs, £7. 10s. p hards, £7. 15s. per ton; caustic soda, 77%, £11. 10s. per ton £10. 5s. per ton; recovered sulphur, 2 cwt. bags, £5. 15s. pe soda ash, 48%, £5. 8s. 9d. per ton, 52%, £5. 17s. 9d. per ton £6. 6s. 9d. per ton; alkali, 36%, £4. 18s. 6d. per ton; white 48%, £6. 10s. per ton, 50%, £6. 15s. 6d. per ton, 52%, £7. pe hyposulphite of soda, £7. per ton in 5-7 cwt. casks, £7. 15s. p in 1 cwt. kegs, both in 10 ton lots; silicate of soda, 75° Tw. £2. 1 per ton, 100° Tw. £3. 13s. per ton, 140° Tw. £4. 2s. 6d. per ton crystals, in casks, £2. 17s. 6d. per ton gross weight, in 2 cwt. £2. 17s. 6d. per ton nett weight; chlorate of potash, 6½d. per l 6%; pearl hardening, £3. 10s. per ton; pure white sulphate of al £4. 10s. per ton; blanc fixe, £7. 10s. per ton; chloride of b £7. 10s. per ton; nitrate of baryta crystals, £17. per ton; nit baryta, ground, £17. 10s. per ton; sulphide of barium, £7. pe carbonate of alumina, £28. 10s. per ton; aluminate of soda, £3 per ton; hydrate of barium, £11. per ton.

Salt quiet, at 9s. per ton nett f.o.b. Tees. Rather better d for "fishery."

In the coal trade business has recently been brisk, cons endeavouring to increase their stocks of coal as much as possible.

As regards the threatened strike in Durham there appears t more hopeful feeling.

The result of the ballot now before the miners upon the que "Strike" or "Federation power to settle" will probably be kno Thursday, upon which will depend whether there is to be a str not.

WEST OF SCOTLAND CHEMICALS.

GLASGOW, Tuesd

Sulphate of ammonia, of which 598 tons were shipped out of last week, continues utterly lifeless as regards the transaction o business, and all holders are much discouraged. Spot price nominally at £10. 5s., but very probably it has been parted with than that since the beginning of last week. There is perhaps a what improved tone in the inquiry for forward delivery, but at low figure, also, no more than £10. 7s. 6d. being spoken of by the ing section.

Chemicals generally seem to have become the least bit less languid here, the effect probably of the threatened temporary drying up of makers' fuel supply. Chlorate of potash has been put up a further fraction, and bleaching powder is firmer and slightly dearer, under the prompting of a considerable oversea demand, from Russia chiefly. There is no change of price in any of the other lines. It is announced to-day that the United Alkali Company will completely close and dismantle two of the Scotch works, bought over by them at formation. The Eglinton Bichrome Works (Irvine) they closed directly they got possession, and it is now stated that they have sold the bichrome plant, definitely to Messrs. White, the old and principal Scotch makers.

There is no change of consequence amongst the paraffins and these continue rather flat therefore. Gas oils are in better demand, but low prices only are offered. Lubricating oils, generally, are slightly weaker (without loss of price however), due to a drop on the part of the American refiners.

Chief prices current are:—Soda crystals, £2. 17s. 6d., nett Tyne; alum in lump, £5. 10s., nett Glasgow; soda ash, 1⅜d., less 2½%, Tyne; caustic soda, white, 74°, £11. 5s., 70/72°, £10. 5s., 60/62°, £9. 2s. 6d., and cream 60/62°, £8. 17s. 6d., all nett Liverpool; bicarbonate of soda, 5 cwt. casks, £6. 15s., and 1 cwt. casks, £7. nett Tyne; refined alkali, 1⅜d., less 5% Tyne; bleaching powder, £7. 6s. 3d. nett Tyne; saltcake, 37s. 6d.; borax, English refined, £30. and boracic acid, £37. 10s., nett Glasgow; bichromate of potash, 3¾d., less 10% for Scotch and English deliveries (for export 3½d., less 10% f.o.b. Glasgow); bichromate of soda, 2¾d., less 10% for Scotch and English deliveries (for export 2½d., less 10% f.o.b. Glasgow); chlorate of potash, 6¾d., less 5% any port; nitrate of soda, 9s. 6d.; sulphate of ammonia, £10. 5s. f.o.b. Leith; salammoniac, first and second white, £35. and £33., less 5% any port; sulphate of copper, £14. 15s. less 5% Liverpool; paraffin scale (hard), 2⅝d., and soft 2⅛d. to 3d. per lb.; paraffin wax, 120°, semi-refined, 3⅝d. to 4d.; paraffin spirit (naphtha), 7d. a gallon; paraffin oil (burning) 5d., 5¼d. and 5½d. according to kind, at works, for Scotch buyers (English sales about 1d. lower); ditto (lubricating), 865°, £4. to £4. 5s., 885°, £5. 5s. to £7., and 890/895°, £6. to £8. Week's imports of raw sugar at Greenock were 7,775 bags.

New Companies.

Hickleton Main Colliery Co., Limited.—This company was registered on the 26th ult., with a capital of £150,000., in £100. shares, to carry on the business of coal masters, coal owners, iron masters, quarrymen, brick and tile makers, coke makers, coal, coke, stone, clay and brick contractors and merchants, wagon builders, etc., to carry on, extend, develop, maintain, improve, work, manage, and otherwise deal with, works, manufactories, collieries, mines, quarries, etc. The subscribers are:—

	Shares.
D. Davy, Sheffield	1
E. Hague, Sheffield	1
R. Armitage, Farnley Lodge, Leeds	1
C. P. Markham, Harland, Chesterfield, Derby	1
C. E. Hunter, Selaby Park, Gainford, coal owner	1
A. Wilson, Hall, ship owner	1
A. Wilson, Sheffield	1

John Astley and Sons, Limited.—This company was registered on the 26th ult., with a capital of £3,000 in £5 shares, to acquire and carry on the business of oil and colourmen, rope makers, carried on by the firm of Messrs. John Astley and Sons, at 4, Broadgate and Hales-street, Coventry.

Komer Kocha Silver Co., Limited.—This company was registered on the 25th ult., with a capital of £90,000. in £1. shares, to acqure, work, explore, prospect, develop and maintain lands, mines, mining rights in the Republic of Bolivia, and to carry on and conduct the business of miners, smelters, and metal merchants. The subscribers are:—

	Shares.
H. S. Williams, 30, Trevor-square, S.W., accountant	1
C. Lloyd, 12, Grove Villas, St. George's-square, Upton, E.	1
A. E. Wright, 17, Cormine-road, Tufnell Park, accountant	1
W. Ferguson, 10, Bayley-street, W.C.	1
R. Wilkinson, Tooting Cottage, Tooting, S.W., barrister	1
J. Dodd, 4, Brick-court, Temple, E.C., barrister-at-law	1
P. Trickett, 119, London Wall, E.C., brick merchant	1

Oates and Green, Limited.—This company was registered on the 24th ult., with a capital of £50,000., in £10. shares, to amalgamate and carry on the business of brick and tile manufacturers carried on at Halifax, under the style of Oates and Green, and the Ellen Royd Brick and Fire Clay Company, and with a view thereto to enter into the agreement referred in clause 74 of the articles. The subscribers are:

	Shares.
J. W. Ward, South Royde, Halifax	1
W. Oates, Claremont, Halifax, brickmaker	1
J. H. Swallow, Halifax	1
W. H. Boocock, Kensington House, Halifax, solicitor	1
W. Windus, Clifton, Bristol, alkali manufacturer	1
J. L. Green, 48, High-street, Portsmouth	1
J. W. Aked, 21, Hawthorne-terrace, Halifax, clerk	1

The Patent List.

This list is compiled from Official sources in the Manchester Technical Laboratory, under the immediate supervision of George E. Davis and Alfred R. Davis, who report professionally upon the value of Chemical Patents.

APPLICATIONS FOR LETTERS PATENT.

Improved Coupling for Glass Tubes. D. Rylands and S. Slater. 3,393. February 22.
Bleaching Cotton and Other Vegetable Fibre. C. Owens. 3,413. Feb. 22.
Improvements in Linings of Metallurgical Furnaces. A. E. Tucker and F. W. Harbord. 3,422. February 22.
Artificial Fuel. J. B. Butler. 3,442. February 22.
Improvements in Refrigerating Apparatus. W. H. Allen, R. Wright, W. W. Allen, and S. Puplett. 3,463. February 22.
Improvements in Porous Filters. H. Mordtmeyer. 3,464. February 22.
Apparatus for Sterilizing Milk, etc. G. F. Redfern. 3,470. February 22.
Automatic Refrigerator. W. E. Eastman. 3,473. February 23.
Improvements in the Manufacture of Carbonic Acid. The Manchester Oxygen Co., Ltd. and W. M. Jackson. 3,491. February 23.
Electrolysing Alkaline Salts. G. D. Davis. 3,512. February 23.
Electrolysing Alkaline Salts. G. D. Davis. 3,514. February 23.
Improved Galvanic Element. O. Imray. 3,523. February 23.
Improvements in Gas Heating Burners. H. H. Leigh. 3,554. February 23.
Smoke Consuming Furnaces. C. W. Stauss. 3,567. February 23.
Smoke Consuming Apparatus. G. R. Turner. 3,568. February 23.
Refrigerating Apparatus. Ph. Meura and L. Janssens. 3,578. February 23.
Treating Peat and Obtaining Charcoal therefrom. T. Zobrab. 3,619. February 24.
Carbonising Wool, etc. J. Clegg. 3,650. February 25.
Improved Brick. C. W. Preston. 3,656. February 25.
Improvement in Ventilating Fans. R. Tootall. 3,664. February 25.
Coal Washing Apparatus. G. W. Elliott. 3,672. February 25.
Conveyors. G. W. Elliott. 3,673. February 25.
Improvements in Brick Kilns. J. Lodge. 3,686. February 25.
Improved Machinery for the Manufacture of Tin and Terne Plates. J. H. Rogers. 3,699. Feburary 25.
Improved Oil Presses. H. Lambert and Greenwood and Batley, Ltd. 3,706. February 25.
Cleaning Charcoal Filters. F. H. Danchell. 3,708. February 25.
Improvements in Filters. S. Whilbarn and P. Hoy. 3,712. February 25.
Manufacture of Dyes from Triphenyl-Methane. J. Y. Johnson. 3,718. February 25.
Construction of Sewers for Chemicals and the like. T. B. Provis. 3,731. February 25.
Smoke Prevention. H. E. P. Cottrell and G. Pauling. 3,771. February 26.
Colours Specially Applicable for Colouring Photographs. A. J. Boult. 3,791. February 26.
Converting Ferrous into Ferric Chloride and Apparatus therefor. G. W. Sharp and C. H. Harvey. 3,794. February 26.
Improvements in Iron Mains for Water and Chemical Fluids. J. Penney. 3,830. February 27.
Application of Aluminium to the Manufacture of Trunks, etc. G. Vuitton. 3,842. February 27.
Separating Tin from Tin Scrap. T. Twynam. 3,844. February 27.
Brick Making Machinery. J. Buchanan. 3,845. February 27.
Smoke Consuming Furnaces. I. S. McDougall. 3,846. February 27.
Improvements in Electric Motors. C. Coerper. 3,875. February 27.
An Improved Atomizer. W. W. Horn. 3,877. February 27.
Manufacture of Oxalic Acid and Cellulose. E. Rijan. 3,880. February 27.
Improvements in Electrical Accumulators. K. Kahabka. 3,881. Feb. 27.

Gazette Notices.

PARTNERSHIPS DISSOLVED.

Wright, Layman, and Umney, Southwark-street, S.E., wholesale druggists, as far as regards E. Wright.

Ellis and Stirzaker, Cleckheaton, manufacturing chemists.

C. F. Young and J. I. Widdop, under the style of C. F. Young and Co., Manchester, chemical manufacturers, as far as regards J. I. Widdop.

J. Tomlinson and F. G. Williams, under the style of J. Tomlinson and Co., Manchester, paper merchants.

BANKRUPTCY ACTS, 1883 AND 1890.

Receiving Orders.

Jones, Harry, Redhill, oil and colourman.

Pattrick, G. T., late of Wingate and Hartlepool, chemist and druggist.

French J. W., Durham-road, Holloway, and Moray-road, Tollington Park, W., wholesale oilman.

Davis, Herbert, of Balsall Heath, and Davis, W. A., of Birmingham, trading in Birmingham, drysalters.

Wood, James, Stoke-on-Trent, late trading in co-partnership with L. B. Wood as James Wood, brick and tile manufacturer.

Adjudications.

Jones, Harry, Redhill, oil and colourman.

French, J. W., Durham-road, Holloway, and Moray-road, Tollington Park, W., wholesale oilman.

Brooke, Thos. (recently trading as T. Brooke and Co.), Bradford, late in co-partnership with J. J. Telford, oil merchant.

Davis, H., of Balsall Heath, and Davis, W. A., of Birmingham, trading in Birmingham, drysalters.

Wood, James, Stoke-on-Trent, late trading in co-partnership with L. B. Wood as James Wood, brick and tile manufacturer.

IMPORTS OF CHEMICAL PRODUCTS

AT

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending February 27th.

Acetone—
Holland, 1 pk Barr, Moering & Co.

Acetic Acid—
France, 1 pk. White Bros.
Holland, 6 Burrell & Co.
,, 24 A. & M. Zimmermann

Acetate of Lime—
U. S., 403 pks. Johnson & Hooper

Alkali—
France, 20 c. L. & N.-W. Ry. Co.
,, 110 Arnati & Harrison

Alum—
Holland, 11 pks. Ohlenschlager Bros.

Barytes—
Germany, 49 cks. O'Hara & Hoar
,, 4 H. Lambert
Belgium, 20 W. Harrison & Co.

Boracic Acid—
Italy, 9 pks. J. Puddy & Co.

Borate of Manganese—
Germany, 6 pks. Becker & Ulrich
,, 10 Petri Bros.

Brimstone—
Italy, 5 t. Union L. Co., Ld.
,, 2 M. D. Co.
,, 25 G. Boor & Co.
Japan, 2 L. Wolffenstein
Italy, 30 J. Kitchin, Ld.
E. Indies, 1 L. & I. D. Jt. Co.

Bromine and Bromide of Iron—
Germany, 35 pks. A. & M. Zimmermann

Caoutchouc—
Germany, 20 c. Prop. Bull Wf.
E. Indies, 15 L. & I. D. Jt. Co.
Madagascar, 54 Procter Bros.

Chemicals (*otherwise undescribed*)
Germany, 60 pks. A. & M. Zimmermann
,, 4 T. A. Smith & Co.
,, 3 Domeier & Co.
,, 2 C. Atkins & Nisbet
,, 10 W. Burton & Sons
Holland, 3 J. W. Drysdale & Co.
Germany, 23 T. H. Lee
,, 47 Burgoyne & Co.
,, 48 L. & I. D. Jt. Co.

Citrate of Lime—
Italy, 10 pks. W. C. Bacon & Co.

Copper Pyrites—
Spain, 927 t. Anderson, Anderson & Co.

Cream of Tartar—
Italy, 57 pks. M. D. Co.
France, 5 W. Johnston & Co.
,, 7 T. Ronaldson & Co.
Spain, 5 W. C. Bacon & Co.
Italy, 44 Howards & Son
,, 76 Thames S. T. & L. Co.
France, 11 B. & F. Wf. Co.
Italy, 2 W. C. Bacon & Co.
France, 3 E. W. Carling & Co.
Auckland, 1 G. W. Wheatley & Co.

Dyestuffs—
Cochineal
Canary, 3 pks. Bruce & White
,, 6 Lewis & Peat
,, 8 Swainston & Co.
,, 10 Kuhner, Henderson & Co.
,, 8 Price, Hickman & Co.
Extracts
Canada, 120 pks. T. Ronaldson & Co.
Belgium, 23 Leach & Co.
France, 50 W. Bauer & Co.
,, 28 Carey & Sons
U. S., 32 W. Burton & Son
Gambier
Singapore, 139 pks. R. & J. Henderson
Indigo
E. Indies, 99 chts. Darling Bros.
,, 32 F. Stahlschmidt & Co.
,, 17 Dipnall & Co.
,, 63 P. & O. Co.
,, 4 G. Steinthal & Co.
,, 47 Arbuthnot, Latham & Co.
,, 7 T. Barlow & Bros.
,, 4 Parson & Keith
,, 57 E. Bower & Co.
,, 10 F. W. Heilgers & Co.
,, 177 Ernsthausen & Co.
,, 88 Steinthal & Fuchs
,, 162 Ralli Bros.
,, 312 Elkan & Co.
,, 57 F. W. Heilgers & Son
,, 28 Ross & Doering
,, 9 Ripling, Roberts & Co.
,, 275 G. Ward & Son
,, 13 J. Forsey
,, 508 L. & I. D. Jt. Co.
Myrabolams
E. Indies, 334 pks. Baxter & Hoare
,, 1,680 L. & I. D. Jt. Co.
,, 770 Lucas & Spencer
Saffron
Spain, 1 pk. L. & N.-W. Rly. Co.
Sumac
Italy, 100 pks. F. Roberts
,, 400 Beresford & Co.
,, 200 Union L. Co. Ld.
,, 1,350 J. Kitchen, Ld.
Tanners' Bark
Natal, 32 t. Boutcher, Mortimore & Co.
Melbourne, 189 Baxter & Hoare
Belgium, 12 Arnati & Harrison
Cape, 19 Dyster, Nalder & Co.
Turmeric
E. Indies, 1,395 pks. L. & I. D. Jt. Co.
,, 150 Major & Field
China, 32 W. M. Smith & Sons
E. Indies, 149 Clarke & Smith
,, 90 Prop. Ball Wf.
,, 222 R. G. Hall & Co.
Valonia
A. Turkey, 67 t. J. Graves
,, 157 S. Barrow & Bros., Ld.
,, 27 Anning & Cobb
,, 50 Beresford & Co.
,, 266 A. & W. Nesbitt
,, 100 Boutcher, Mortimore & Co.

Glucose—
U. S., 250 pks. 250 c. L. Norman & Co.
,, 50 264 W. Balchin
France, 100 100 J. F. Ohlmann
,, 100 100 Dutrulle, Solomon & Co.
U. S., 30 190 Prop. Scott's Wf.
,, 250 250 L. Sutro & Co.
,, 250 250 Ohlenschlager Bros.
,, 100 100 Lichtenstein & Co.
,, 200 1,203 J. Knill & Co.
,, 211 710 Prop. Chmbln.'s Wf.
,, 50 50 L. & I. D. Jt. Co.
,, 150 775 L. Sutro & Co.
,, 775 900 R. G. Hall & Co.
,, 300 300 Lichtenstein & Co.
France, 600 600 J. W. Harloch
,, 500 500 L. Norman & Co.
,, 300 300 J. Barber & Co.
U. S., 1,250 1,250 Baxter & Hoare
,, 250 250 C. F. Webster & Co.
,, 50 300 Page, Son & East
,, 100 100 J. Barber & Co.
,, 1,000 1,000 Union Litharge Co., Ld

Magnesium Carbonate—
Holland, 301 pks. Beresford & Co.

Manure—
Germany, 10 t. Ang.-Contl. G. Works
France, 345 J. Burnett & Sons

Naphtha—
Germany, 5 drs. H. Johnson & Sons

Ochre—
Germany, 3 pks. Phillipps & Graves
France, 112 cks. W. Harrison & Co.

Paraffin Wax—
U. S., 520 brls. H. Hill & Son
,, 52 McDougall & Bonthron

Painters' Colours—
Singapore, 9 pks. L. & I. D. Jt. Co.
Germany, 28 ,,
France, 9 Flageollet & Co.
Germany, 15 T. H. Lee
Holland, 14 cks. Magee, Taylor & Co.
,, 12 R. Baelz & Co.
,, 14 J. Owen
Germany, 6 pks. H. Lambert
,, 15 Phillipps & Graves
France, 5 Bennett S.S. Co.
,, 11 C. S. Lovell
,, 12 L. & I. D. Jt. Co.
Germany, 25 G. Steinhoff

Pearl Ashes—
France, 40 c. Petri Bros.

Phosphate Rock—
Holland, 10 t. B. Jacob & Sons
Belgium, 230 Lawe's Chem. Mnre. Co.
,, 200 D. de Pass & Co.
,, 125 Walker, Howard & Co.
,, 210 T. Farmer & Co., Ld.
,, 750 Odam's Chem. Mnre. Co.

Pitch—
France, 60 cks. H. Hill & Sons

Plumbago—
Germany, 1 cs. Craven & Co.
Italy, 100 bgs. B. Galloway
Ceylon, 546 brls. J. Thredder, Son & Co.
,, 208 Prop. Sun. Wf.
Holland, 15 cks. B. Galloway

Potashes—
France, 20 c. Sollas & Sons

Potassium Bichromate—
Holland, 20 pks. C. S. Lovell

Potassium Bromide—
U. S., 50 pks. S. Lambert & Co.

Potassium Carbonate—
France, 20 c. F. J. Putz & Co.
,, 4 pks. Spies, Bros. & Co.
,, 3 c. J. A. Reid
Holland, 25 cks. A. & M. Zimmermann

Potassium Sulphate—
France, 4 pks. Weatherley Mead Co.
,, 200 F. W. Berk & Co., Ld.
,, 10 Sollas & Sons

Quicksilver—
Spain, 5,000 flsks. N. M. Rothschild & Sons

Salicylate—
Holland, 28 pks. R. Morrison & Co.

Saltpetre—
E. Indies, 245 bgs. C. Wimble & Co.
Germany, 50 cks J. Hall & Son

Sodium Acetate—
France, 16 pks. S. F. Waters & Co.

Sodium Chlorate—
France, 100 pks. Union L. Co., Ld.

Sodium Nitrate—
Germany, 4 pks. C. Faust & Co.

Tartaric Acid—
Italy, 80 pks. W. B. Bacon & Co.
Germany, 1 Becker & Ulrich
Holland, 3 Middleton & Co.

Ultramarine—
Holland, 6 pks. Haeffner, Hilpert & Co.
Belgium, 2 cks. W. Harrison & Co.
,, 8 Leach & Co.
Holland, 8 pks. Phillipps & Graves
Germany, 21 J. Kitchin, Ld.

White Lead—
Holland, 18 cks. Stobbs & Co.
,, 18 A. & M. Zimmermann
,, 9 T. T. Creed
,, 57 Burrell & Co.
Germany, 47 30 brls. H. Lambert
Holland, 20 brls. J. Van Dulkein
Germany, 33 cks. Spies, Bros. & Co.

Zinc Oxide—
Germany, 35 brls. M. Ashby, Ld.
Holland, 80 80 cks. ,,
,, 20 pks. J. Parlevliet
Germany, 50 cks. J. Matton

LIVERPOOL.

Week ending March 3rd.

Acid—
Havre, 5 pks. Cunard S.S. C[illegible]

Aluminium—
Antwerp, 1 cs. J. T. Fletch[illegible] & C[illegible]

Ammonia—
Havre, 2 pks. Cunard S.S. C[illegible]

Barytes—
Antwerp, 206 cks.
In transit, 248
Rotterdam, 12

Barium Carbonate—
Bremerhaven, 1 cs.

Carbolineum—
Hamburg, 5 cs.

Copper Pyrites—
Huelva, 1,120 t. Matheson & C[illegible]

Copper Regulus—
Hamburg, 24 bgs.

Cream of Tartar—
Barcelona, 5 cks. Sachse & Kle[illegible]
Tarragona, 5
Barcelona, 3 pps. 8 cks. 5 brls.
Rotterdam, 7

Dyestuffs—
Divi divi
Havre, 66 bgs. Cunard S. S. C[illegible]
Hamburg, 212
Madder
Smyrna, 16 bls.
Myrabolams
Bombay, 1,950 bgs. Ralli B[illegible]
,, 667 Forbes, Forbes & [illegible]
,, 450 Aldridge, Salt[illegible] & [illegible]
,, 1,098
Calcutta, 292 1,000 pks.
Sumac
Palermo, 150 brls. 350 bgs.
Trieste, 25
Valonia
Constantinople, 85 bgs. P. G. Lam[illegible]
,, 687
Smyrna, 1,245 bgs. C. Z[illegible]
,, 5 C. G. Gulbenk[illegible] & [illegible]
,, 3,949 765 kintal
Syra, 748

Glucose—
Dunkirk, 200 bgs.
New York, 250 brls.

Guano—
Corcovado, 1,050 t. Peruvian G[illegible] pora[illegible]

Nitrate—
Pisagua, 14,019 bgs.

Ochre—
Bordeaux, 17 cks.

Oleine—
Antwerp, 10 cks.

Permanganate—
Hamburg, 10 css.

Plumbago—
Antwerp, 25 bgs.

Potash—
Dunkirk, 18 cks. 72 dms.

Potassium Carbonate—
Hamburg, 4 cks.

Pyrites Sulphate—
Huelva, 3,690 tons Matheson &

Saltpetre—
Hamburg, 70 kgs.

Soap—
Leghorn, 50 cs.
Philadelphia, 900 bxs. 50 crts. 13 cs

Soapstone—
Genoa, 100 bgs.

Sodium Acetate—
Antwerp, 19 cks.

Stearine—
New York, 1 cs.
Antwerp, 13 bgs.

Sulphur—
Catania, 40 bgs.

Sulphur Flowers—
Catania, 20 bgs.
Sulphur Ore—
Huelva, 1,068 t. Matheson & Co.
Tartar—
Bordeaux, 18 cks.
Tartaric Acid—
Rotterdam, 2 cks.
Ultramarine—
Trieste, 30 cs.
Rotterdam, 10 cks. 13
Verdigris—
Bordeaux, 3 cks.
White Lead—
Ghent, 14 cks.
Rotterdam, 18
Zinc Oxide—
Antwerp, 33 brls.
Rotterdam, 10 cks.
Antwerp, 10 brls. J. T. Fletcher & Co.
" 130
Zinc White—
Antwerp, 25 cks.

GLASGOW.

Week ending March 3rd.

Alkali—
Hamburg, 36 cks.
Chemicals (*otherwise undescribed*)
Hamburg, 12 demijohns
Cream of Tartar—
Rotterdam, 10 cks. J. Rankine & Son
Dyestuffs (*otherwise undescribed*)
Boston, 100 bxs. J. Dawson & Co.
Dyestuffs—
Alizarine
Rotterdam, 63 cks.
Argols
Bordeaux, 5 cks.
Indigo
Calcutta, 102 chts.
Glucose—
New York, 50 brls.
Glue—
Rotterdam, 3 cks. J. Rankine & Son
Potash—
Dunkirk, 20 dms. Ferguson, Shaw & Co.
Potassium Carbonate—
Hamburg, 86 cks.
Salicylic Acid—
Hamburg, 1 cs.
Soap—
Philadelphia, 200 bxs.
Stearine—
Bordeaux, 50 bgs. J. & P. Hutchinson
Tartar—
Bordeaux, 8 cks. J. & P. Hutchinson
" 1 brl.
Tartar Emetic—
Hamburg, 1 ck.
White Lead—
Rotterdam, 4 cks.
Zinc Oxide—
New York, 100 brls.
Zinc White—
Rotterdam, 50 cks.

HULL.

Week ending February 25th.

Alkali—
Bremen, 2 cs. J. Pyefinch & Co.
Alumina—
Rotterdam, 18 cks. W. & C. L. Ringrose
Ammonia—
Rotterdam, 1 brl. Hutchinson & Son
" 7 cks.
Arsenic—
Hamburg, 4 cks.
Barytes—
Antwerp, 10 cks. Bailey & Leetham
Bremen, 42
Chemicals (*otherwise undescribed*)
Antwerp, 45 pks. Wilson, Sons & Co.
Dunkirk, 11 cks. 97 pks. 250 bgs. Wilson, Sons & Co.
Rotterdam, 4 pks. W. & C L. Ringrose
Copenhagen, 6 cks. Wilson, Sons & Co.
Bremen, 2 cs. "
" 2 Veltmann & Co.
" 1 ck. J. Pyefinch & Co.
Copper Sulphate—
Dunkirk, 76 css. Wilson, Sons & Co.
Dyestuffs—
Alizarine
Rotterdam, 61 pks. W. & C. L. Ringrose
" 19 brls. 52 cks. Hutchinson & Son
" 6 G. Lawson & Son
Madder
Rotterdam, 5 cks. W. & C. L. Ringrose
Myrabolams
Bombay, 2,293 bgs. 1,548 pockets
Sumac
Bordeaux, 50 bls. Rawson & Robinson
Valonia
Smyrna, 6,300 c.
Glucose—
Dunkirk, 10 cks. 14 pks. Wilson, Sons & Co., Ld.
Kainit—
Hamburg, 203 bgs. G. Lawson & Sons
Oleine—
Rotterdam, 2 cks. W. & C. L. Ringrose
Antwerp, 2 Bailey & Leetham
Phosphate—
Dunkirk, 200 bgs.
Pitch—
Amsterdam, 25 cks. H. F. Pudsey
Potash—
Rotterdam, 15 cks. G. Holmes & Co.
" 20 W. & C. L. Ringrose
Quicksilver—
Hamburg, 5 btls. Wilson, Sons & Co.
Saltpetre—
Hamburg, 10 cks. Bailey & Leetham
Tartaric Acid—
Rotterdam, 4 cks. W. & C L. Ringrose
White Lead—
Rotterdam, 45 cks.
Zinc Oxide—
Rotterdam, 25 cks. Sissons, Bros. & Co.

TYNE.

Week ending February 27th.

Alum Earth—
Hamburg, 17 cks Tyne S.S. Co.
Manganese Ore—
Gothenburg, 18 cks.
Pyrites—
Huelva, 1,357 t. Scott Bros.
Pyrites Sulphate—
Huelva, 1,450 t. Scott Bros.
Sulphur Ore—
Pomaron, 1,350 t. Mason & Barry

GOOLE.

Week ending February 17th.

Albumen—
Antwerp, 2 css.
Antimony—
Boulogne, 7 cks.
Caoutchouc—
Boulogne, 1 ck.
Dyestuffs (*otherwise undescribed*)
Boulogne, 115 cks. 18 css.
Dyestuffs—
Alizarine
Rotterdam, 73 brls.
Logwood
Jamaica, 903 t.
Glucose—
Calais, 300 bgs.
Ochre—
Calais, 64 cks.
Potash—
Dunkirk, 8 pks.
Potassium Muriate—
Rotterdam, 10 cks.
Rosin—
Savannah, 2,812 brls.
Saltpetre—
Rotterdam, 100 bgs.
Hamburg, 29 cks. 135
Soda—
Rotterdam, 45 cks.
Tar—
Boulogne, 25 cks.
Waste Salt—
Hamburg, 200 bgs.

GRIMSBY.

Week ending February 20th.

Albumen—
Hamburg, 30 pks.
Chemicals (*otherwise undescribed*)
Hamburg, 20 pks.
Farina—
Hamburg, 165 bgs.
Zinc Ashes—
Rotterdam, 20 pks.
Antwerp, 6 cks.

EXPORTS OF CHEMICAL PRODUCTS

OF

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending March 2nd.

Acids—
Barbice, 5 carboys. £35
Natal, 4 pks. 23
Alkali—
Algoa Bay, 5 kgs. 13 c. £23
Alum—
Bourgas, 2 t. 5 c. £12
Alum Cake—
Calcutta, 35 t. 4 c. £123
Ammonium Carbonate—
Samos, 8 c. £8
Ammonium Chloride—
[illegible], 30 cks. £150
Ammonium Sulphate—
[illegible], 164 t. 16 c. £1,812
[illegible], 20 1 105
[illegible], 50 525
Amorphous Phosphorus—
[illegible], 10 cs. £94
Asbestos—
[illegible], 48 t. £525
Bleaching Powder—
[illegible], 20 cks. £22
Bone Ash (Superphosphate)—
Mauritius, 40 t. £155
Borax—
Natal, 4 pks. £12
Melbourne, 12 c. 17
Carbolic Acid—
Melbourne, 6 c. £10
Hamburg, 20 cks. 29
Rotterdam, 49 146
New York, 1 t. 13 66
Carbolic Acid Crystals—
Leghorn, 3 cs. £15
Yokohama, 1 t. 45
Carbonic Acid Gas—
Bermuda, 10 tubes. £38
Carbon Bisulphide—
Stettin, 1 t. 4 c. £17
Caustic Potash—
Gibraltar, 5 c. £7
Caustic Soda—
Algoa Bay, 9 c. £18
Auckland, 5 t. 7 54
Brisbane, 15 38
Larnaca, 6 4
Natal, 2 3
Chemicals (*otherwise undescribed*)
Wellington, 22 pks. 2 tanks. £71
Brisbane, 3 c. 8 kgs. 110
Algoa Bay, 8 pks. 10 kgs. 67
Melbourne, 20 cs. 5 43
Yokohama, 3 47
Varna, 12 cks. 12
Adelaide, 10 711
Auckland, 46 154
Calcutta, 1 55
Lisbon, 1 t. 1 c. 17
Citric Acid—
Sydney, 5 c. £36
Vigo, 5 37
Hamburg, 20 kgs. 8 1 ck. 241
Thursday Island, 1 kgs. 5
Rotterdam, 2 2 86
Libau, 10 10 439
Lisbon, 14 pks. 41
Calcutta, 3 cs. 12
Singapore, 1 11
Leghorn, 5 c. 35
Genoa, 28 26 kgs. 20 771
Coal Products—
Aniline Dyes
Melbourne, £12
New York, 42 pks. 1,050
Calcutta, 4 cs. 113
Aniline Oil
Ghent, 2 dms. £80
Anthracene
Dusseldorf, 525 cks. £4,674
Rotterdam, 53 648
Benzol
Rotterdam, 48 pks. 63 dms. 19 pns.
24 brls. £2,186
Calais, 20 pns. 240
Carbolineum
Hamburg, 140 brls. £67
Coal Tar
Natal, 140 dms. £10
Creosote
Boulogne, 4 css. £48
Hamburg, 100 brls. 49
New York, 2 24
Naphtha
Calais, 25 rnlts. £83
Wellington, 10 dms. 10
Naphthaline
Bremen, 14 cks. £104
New York, 45 85
Hamburg, 15 84
Paraffin Wax
Antwerp, 3 cs. £15
Copenhagen, 50 cks. 200
Pitch
Naples, 150 cks. £105
Ibrail, 25 8
Sulina, 10 3
Galatz, 60 18
Alexandria, 200 68
Treport, 6 25
Hamburg, 130 t. 237
Dunkirk, 153 279

Tar
Ibrail, 110 cks. £60
Galatz, 130 69
Auckland, 12½ brls 20 dms. 14
Tar Oil
Holland, 46 cks. £30
Calais, 60 rnlts. 64
Tar Pitch
Dunkirk, 295 t. £560
Toluol
Rotterdam, 24 pns 10 dms. £280
Treport, 16 cks. 48

Copperas—
Bourgas, 2 t. 14 c. £10
Galatz, 2 17 6

Copper Sulphate—
Bourgas, 9 c. £7
Galatz, 12 9
Hobart, 1 t. 17
Rotterdam, 5 3 74
Constantinople, 13 4 cks. 35
Paris, 10 4 165
Ghent, 5 3 78
Marseilles, 14 18 204

Cream of Tartar—
Cape Town, 2 c. part of 14 kgs. £21
Sydney, 1 t. 94
Melbourne, 1 93
Lyttleton, 1 7 c. 130
Brisbane, 2 10
Algoa Bay, part of 35 cs. 2 c. 59
Auckland, 3 t. 7 199
Natal, 2 13

Disinfectants—
Melbourne, 12 cs. £32
Hong Kong, 50 drs. 50
New York, 2 t. 3 c. 20
Auckland, 2 cs. 9
Otago, 14 33

Fluoric Acid—
Melbourne, 3 c. £18

Guano—
Lauderneau, 296 t. 14 c. £2,967

Manure—
Mauritius, 425 t. 16 c. £2,370
Berbice, 40 410
Malaga, 78 1 700
Hamburg, 98 9 360
Martinique, 169 17 1,685
Rouen, 26 135
Hamburg, 248 9 2,010
Havre, 30 10 135
Gothenburg, 121 16 483
Treport, 39 18 210
Carthagena, 37 1 296

Mirbane—
Sydney, 10 cs. £48
Hamburg, 17 pks. 4 css. 57

Phosphorus—
Dunedin, 23 cs. £150
Sydney, 24 148

Phosphoric Acid—
Demerara, 10 bgs. £15

Picric Acid—
Melbourne, 4 cks. £59

Potassium Chlorate—
Auckland, 5 c. £13
Algoa Bay, 10 28

Saltpetre—
Cape Town, 17 c. £19
Bahia, 1 t. 3 26
Rio Grande do Sul, 17 19
Oporto, 6 125
Bilbao, 1 2 25
Rio de Janeiro, 10 11 236
Melbourne, 2 43

Sheep Dip—
Algoa Bay, 262 pks. 100 cs. 439
E. London, 50 css. 140
Pt. Elizabeth, 100 pks. 12 314
Calcutta, 185 54
Natal, 516 180

Soda—
Cape Town, 6 c. £9
Natal, 5 1
Montreal, 13 42

Soda Crystals—
Thursday Island, 4 c. £1
Demerara, 1 t. 13 56
Fremantle, 3 42

Sodium Bicarbonate—
Algoa Bay, 10 c. £8
Cape Town, 16 9
Pt. Elizabeth, 11 5
Sydney, 10 4
Maryboro, 10 4
Brisbane, 1 t. 7
Thursday Island, 5 2
Demerara, 10 4
Smyrna, 1 3
Adelaide, 2 13

Sodium Tartrate (Ground)—
Melbourne, 5 c. £19

Sulphur—
E. London, 25 cks. £26
Bahia, 1 t. 10 c. 12
Lisbon, 300 brls. 254

Sulphur Flowers—
Sydney, 2 t. £18

Sulphuric Acid—
Algoa Bay, 25 cs. £25
Rangoon, 1 t. 13 c. 10

Superphosphate—
Martinique, 365 t. £1,095
Cherbourg, 550 2 c. 1,650
Lauderneau, 74 2 222
Bordeaux, 65 7 195

Tartaric Acid—
Algoa Bay, 35 cs. £14
Cape Town, part of 14 kgs. 2 c. 25
Sydney, 2 t. 231
Dunedin, 2 c. 12
Brisbane, 1 13 193
Melbourne, 2 10 288
Lyttleton, 3 30
Otago, 10 55

LIVERPOOL.

Week ending March 2nd.

Alum—
Salonica, 3 t. £15
Oporto, 3 16 c. 20
Montreal, 1 2 6
Larnaca, 18 5
Rosario, 1 11 8
Canea, 2 10
Calcutta, 20 7 101
Beyrout, 3 9 21
Smyrna, 3 18
Valparaiso, 3 5 20
Galatz, 2 12
Alexandria, 2 15 16

Aluminoferric—
San Francisco, 5 t. 2 c. £15

Ammonia—
Coquimbo, 15 cs. £24

Ammonium Carbonate—
Marseilles, 9 c. 2 q. £14
Antwerp, 9 3 16
Ancona, 8 11
Barcelona, 2 t. 3 2 64
Santos, 3 9

Ammonium Chloride—
Samarang, 101 t. 8 c. 3 q. £1,030
Gantaadu, 11 15
Philadelphia, 13 320
New York, 15 7 375

Ammonium Sulphate—
Santander, 10 brls. £19
Vigo, 3 t. 5 c. 17
Nantes, 51 8 540
Dunkirk, 71 6 775
Genoa, 40 11 1 q. 428
Venice, 50 3 550
Valencia, 231 11 3 2,497
Ghent, 50 11 550
Bordeaux, 5 4 57
Las Palmas, 24 18 292
Gd. Canary, 3 11 37
Barcelona, 50 3 596
Ancona, 2 5 3 32
Paris, 45 8 522

Bleaching Powder—
Ancona, 45 cks.
Baltimore, 200
Boston, 1,055
Ghent, 75
Halifax, 141
Lisbon, 6
Oporto, 20 50 pps.
Philadelphia, 136
Windsor Mills, 38
Calcutta, 177 cs.
Mexico City, 10 brls.
New York, 387
Palermo, 5
Rouen, 13

Borate of Lime—
Rotterdam, 140 bgs. £136

Borax—
Nantes, 1 t. £30
Bombay, 14 c. 39
Antwerp, 1 2 32
Vera Cruz, 19 28
Melbourne, 1 1 31
Montreal, 3 3 91
Cienfuegos, 4 7
Sydney, 1 31
Seville, 2 19 3 q. 85
Hamburg, 10 4 2 296
Havana, 6 9

Brimstone—
Philadelphia, 334 bgs. £260
Boston, 668 530
Antwerp, 64 48
Ghent, 40 31

Calcium Chloride—
New York, 20 t. 1 c. £45

Carbolic Acid—
Hiogo, 2 t. 16 c. 3 q. £92
Hamburg, 1 13 3 97

Caustic Potash—
Havana, 5 c. 1 q. £6

Caustic Soda—
Paysandu, 50 dms.
Portland (M.), 50
Quebec, 50
Rio Grande, 25
Rosario, 20 10 kgs.
Rouen, 145
Santander, 18
Seville, 118 100 brls.
Trinidad, 20
Valencia, 35
Philadelphia, 75
Para, 6
Pt. Natal, 10
San Francisco, 10
San Sebastian, 20 20 cks.
Trieste, 7
Vigo, 8
Alexandria, 150
Algoa Bay, 6
Amsterdam, 50 kgs.
Ancona, 4
Antwerp, 54
Alicante, 39
Baltimore, 270
Barcelona, 350 60 cks.
Boston, 450
Callao, 50 6
Chicago, 300
Cienfuegos, 12
Galatz, 452
Genoa, 15
Hamburg, 50
Jaffa, 50
Naples, 50
Oporto, 70
Bahia, 45
Bari, 108
Bilbao, 80
Bombay, 200
Canea, 30
Carthagena (S.), 30
Hiogo, 100
Lyttleton, 30
Maceio, 30
Madrid, 185
Melbourne, 45
New Orleans, 20
New York, 312 10 10 bxs.

Chemicals (*otherwise undescribed.*)
Yokohama, 1 t. 3 c. 2 q. £30
New York, 13 1 23
Havre, 5 2 2 201
Odessa, 7 11 230
B. Ayres, 1 17
Genoa, 8 6 14
Beyrout, 4 6
Antwerp, 13 4 1 405
Ibrail, 12 21
Ancona, 10 17

Citrochloric Acid—
Alexandria, 1 cs. £8

Cobalt Oxide—
New York, 9 c. £407

Copperas—
Constantinople, 2 t. 10 c. £5
Beyrout, 3 14 8
Canea, 2 1 4
Alexandria, 20 10 63

Copper Sulphate—
Christiania, 9 c. £6
Garston, 47 4 664
Ghent, 2 8 35
Genoa, 4 18 66
Rouen, 83 14 1,255
Halifax, 1 1 14
Kurrachee, 1 3 17
Venice, 20 10 2 q. 288
Alexandria, 1 8 21
Ibrail, 10 8
Mexico, 10 3 155
Naples, 14 8 1 217
Valparaiso, 5 77
Trieste, 5 83
Bordeaux, 147 19 2,189
B. Ayres, 7 15 2 124
Leghorn, 24 6 365

Cream of Tartar—
Montreal, 11 c. £52

Disinfectants—
Melbourne, 30 cks. 5 css. £47

Epsom Salts—
Cienfuegos, 750 bgs.
Bombay, 40 5 cks.
Genoa, 6

Magnesium Chloride—
Bombay, 4 t. 9 c. 1 q. £165

Manure—
Malaga, 20 t. £20
Valencia, 50 9 c. 1 q. 140
Havana, 17 28
Rouen, 13 10 95
Antwerp, 10 1 3 66
Genoa, 144 11 1 1,001
Havre, 200 580
Gd. Canary, 14 6 88
Rotterdam, 39 8 144
New York, 2 1 9

Nitric Acid—
Coquimbo, 10 cs. £28

Oxalic Acid—
Barcelona, 13 c. 2 q. £20

Picric Acid Crystals—
New York, 17 c. 2 q. £90

Potashes—
Amsterdam, 1 t 9 c. 1 q. £35

Potassium Bichromate—
Bombay, 1 t. 5 c. £65
Alexandretta, 9 16

Potassium Chlorate—
Santander, 10 c. £27
Montreal, 10 26
Trieste, 8 18
Oporto, 1 t. 54
Boston, 10 469

Potassium Nitrate—
Seville, 2 t. 1 c. £35
Carthagena, 10 1 2 q. 171

Salammoniac—
Trieste, 2 t. £66
Syra, 9 c. 1 q. 15
Barcelona, 2 4 69
Constantinople, 12 2 27
Genoa, 1 2 31

Salt—
Antwerp, 50 t.
Bonny, 25
Boston, 400
B. Ayres, 25
Demerara, 395
Gaboon, 30
Horten, 608
Loango, 40
Newport, 70
Old Calabar, 104
Portland (M.), 100
St. John's (N.B.) 920
Sydney, 380
Valparaiso, 988 100 cs.
Yokohama, 2
Abonnema, 20
Anamaboe, 10½
Bakana, 14
Buguma, 10
Cameroons, 37
Cavally, 7
Monrovia, 7½
New Orleans, 450
Opobo, 1,080 bgs.
Rouen, 10¾
Saltpond, 10
Talcahuano, 200
Victoria (W.I.), 60

Saltcake—
Santander, 29 t. 17 c. £81
Baltimore, 113 8 313
Fonelon Falls, 14 52
Baltimore, 174 4 471

Saltpetre—
Carthagena, 4 t. 1 c. £75

Sheep Dip—
E. London, 3 t. £100

Soap—
Santos, 50 bxs.
Shanghai, 4,255
Sydney, 1,480 cs.
Addah, 10
Alexandria, 1 ck.
Anamaboe, 80
Bagdad, 1
Barbadoes, 650
Bathurst, 20
Callao, 36
C. C. Castle, 100

100 cks.
25
25
on, 1,645
h, 50
il. 1 kg.
(Ja.), 390
21
nas, 180
Bay, 20
1
l, 660
s(Nfd.) 315
s, 220
, 300
, 300
ay, 253 5
, 500 122
s, 6 dms.
, 10
wn, 3,600
130
g, 259
on, 1
6
rk, 55
abeth, 778 50
200
lkali—
35 brls.
40
rtad, 20
35
lh—
, 4 brls.
200 tcs. 192 cks. 200 bgs.
, 8 50
8
n, 200
, 3
20
, 80
rne, 161
10
asgow, 30 tcs.
rk, 90 496
, 2
re, 166
s, 150 brls.
13
15
am, 20
so, 50
5
lphia, 62
d (M.), 103
Janeiro, 50
astian, 8
rystals—
10 brls.
14
, 34 kgs.
448
s, 17
own, 20
ntinople, 50
, 27 50 cks.
100
buco, 150
ano, 40
rg, 4 brls.
d, 33
alts—
ork, 2 t. 6 c. £25
Arseniate—
ork, 1. 14 c. 3 q. £87
1 13
Biborate—
d (M.), 4 t. 2 c. £123
Bicarbonate—
dam, 20 kgs.
p, 39 cks.
na, 75
40
a, 1,625
ntinople, 25
rg, 230 8 7 brls.
105
700
lles, 60 2 23
rne, 154
ki, 100
n, 25
s (Nfld.), 20
ncisco, 200
, 200
20
, 30
, 25 2
100
, 50
50
Bichromate—
1 t. 15 c. £45

Sodium Nitrate—
Oporto, 2 t. 15 c. 3 q. £28
Lisbon, 29 19 3 293
Barcelona, 11 10 113
Ancona, 2 14 2 29
Odessa, 40 1 395
New York, 1 8 1 35
Alicante, 1 9 13
Gd. Canary, 1 1 10
Sodium Silicate—
Seville, 117 brls. 16 cks.
Alicante, 4
Barcelona, 45
Bilbao, 35
Lisbon, 20
Oporto, 13
Valencia, 10
Sodium Sulphate—
Calcutta, 1 t. 18 c. £6
Strontia—
Rouen, 2 t. 8 c. £24
Sulphur—
Rouen, 65 t. 8 c. £371
Portland, 2 16
Sulphate of Lime—
Bordeaux, 5 t. £50
Sulphuric Acid—
Coquimbo, 10 cs. £24
Valparaiso, 1 t. 9
Zinc Chloride—
New York, 4 t. 4 c. £30

GLASGOW.

Week ending March 3rd.

Aniline Colours—
Rotterdam, 5 pks. £65
Coal Tar—
Boston, 25 t. £55
Coal Tar Pitch—
Antwerp, 20 t. 3 c. £25
Santander, 699 1,153
Manure—
Italy, 9 t. 17 c. £50
Naphtha—
Rouen, 22 t. 12¼ c. £265
Painters' Colours—
Rotterdam, 2 cks. £9
Paraffin Wax—
Italy, 16 t. 8 c. £482
Bilbao, 21 16¼ 680
Potassium Bichromate—
Italy, 9 t. 13½ c. £302
Rouen, 91 2½ 2,409
Philadelphia 362 cwt. 634
Antwerp, 200¾ cwt. 280
Rotterdam, 18 cks. 239
Boston, 201 352
Bombay, 124 cwt. 197
Soda Ash—
Philadelphia, 100 t. 7 c. £526
Sodium Bichromate—
Rouen, 5 t. 5¾ c. £120
Sugar of Lead—
Bombay, 38¾ c. £32. 10s.
Sulphuric Acid—
Rangoon, 35 t. 2½ c. £356
White Lead—
Antwerp, 2 t. 10½ c. £46

HULL.

Week ending February 23rd.

Bleaching Powder—
Copenhagen, 2 cks.
Borax—
Christiania, 4 cks.
Hamburg, 1
Calcium Sulphate—
Rotterdam, 300 bgs.
Caustic Soda—
Antwerp, 41 dms.
Konigsberg, 53
Chemicals *(otherwise undescribed)*
Antwerp, 9 cs. 32 pks.
Amsterdam, 24 cks.
Bordeaux, 46 css.
Christiania, 6 css. 17 cks. 13 pks. 323 slabs
Copenhagen, 15 css. 5 cks.
Drontheim, 15 pks.
Dunkirk, 4 cks. 1
Gothenburg, 12 cs. 9 cks. 31 pks.
Hamburg, 176 cs. 7 113
Harlingen, 10 cks.
Konigsberg, 1 20
New York, 650 108
Reval, 4 css.
Rotterdam, 4 1 22
Stettin, 8
Cotton Seed Oil—
Antwerp, 2,088 c.
Amsterdam, 162
Bremen, 324
Flushing, 152
Hamburg, 2,791
Rotterdam, 3,489
Stettin, 99
Creosote Salts—
Antwerp, 120 bgs.
Dyestuffs *(otherwise undescribed)*
Antwerp, 12 cks.
Bergen, 30 bgs.
Gothenburg, 1 css.
Konigsberg, 2
Stettin, 3 cks.
Linseed Oil—
Bordeaux, 53 c.
Christiania, 272
Drontheim, 173
Dunkirk, 20
Gothenburg, 7
Rotterdam, 103
Manure—
Dunkirk, 987 bgs
Hamburg, 568
Naphtha—
Ghent, 11 cks.
Ochre—
Antwerp, 1 cs. 4 cks.
Painters' Colours—
Antwerp, 10 cs. 51 cks. 40 pks.
Amsterdam, 1 1
Bergen, 3
Christiania, 41 161
Copenhagen, 9 22 4 dms.
Dunkirk, 15
Gothenburg, 2 20
Ghent, 2
Hamburg, 2 15
Harlingen, 2
New York, 12½
Rotterdam, 61
Rouen, 10
Pitch—
Antwerp, 672 t.
Dunkirk, 223
Tar—
Bergen, 12 cks.
Copenhagen, 20
Hamburg, 4
Yarnish—
Antwerp, 2 cks. 4 cs.
Amsterdam, 26
Copenhagen, 14 3
Dunkirk, 1
Hamburg, 1 drum.

TYNE.

Week ending February 27th.

Alkali—
Antwerp, 290 c.
Rotterdam, 257
Odense, 124
Genoa, 215
Alum Cake—
Odense, 196 c.
Ammonium Carbonate—
Genoa, 16 c.
Arsenic—
Christiania, 23 c.
Genoa, 24
Barytes—
Genoa, 33 c.
Barytes Carbonate—
Hamburg, 390 c.
Barium Chloride—
Genoa, 22 c.
Bleaching Powder—
Hamburg, 104 c.
Danzig, 707
Antwerp, 101
Christiania, 46
Rotterdam, 1,740
Odense, 181
Aalborg, 25
Genoa, 1,861
Lisbon, 132
Ancona, 67
Copenhagen, 445
Caustic Soda—
Antwerp, 82 c
Hamburg, 20
Stavanger, 84
Aalborg, 116
Genoa, 6,848
Lisbon, 68
Ancona, 240
Coal Tar—
Bergen, 20 c.
Epsom Salts—
Bilbao, 65 c.
Litharge—
Antwerp, 16 c.
Copenhagen, 5
Magnesia—
Hamburg, 1 c.
Antwerp, 24
Odense, 12
Genoa, 51
Copenhagen, 1
Bilbao, 286
Manganese—
Bilbao, 1,000 c.
Phosphorus—
Genoa, 64 c.
Salammoniac—
Genoa, 31 c.
Soda—
Rotterdam, 200 c.
Bilbao, 200
Ancona, 322
Soda Ash—
Hamburg, 162 c.
Christiania, 238
Aalborg, 134
Ancona, 94
Sodium Hyposulphite—
Genoa, 1 c.
Sodium Sulphate—
Genoa, 90 c.
Lisbon, 399
Sulphur—
Hamburg, 260 c.
Antwerp, 200
Christiania, 1,400
Rotterdam, 100
Sulphate of Lime—
Genoa, 258 c.
Superphosphate—
Genoa, 200 c.
White Lead—
Copenhagen, 22 c.

GOOLE.

Week ending February 17th.

Benzol—
Hamburg, 16 drs.
Rotterdam, 19 cks.
Chemicals *(otherwise undescribed)*
Boulogne, 6 cks.
Dunkirk, 1 bg. 1
Coal Products—
Calais, 104 cks.
Rotterdam, 107
Dyestuffs *(otherwise undescribed)*
Antwerp, 1 ck.
Boulogne, 1 cs. 2
Ghent, 3 drs.
Rotterdam, 6
Manure—
Boulogne, 332 bgs.
Bruges, 128
Dunkirk, 200
Ghent, 168
Pitch—
Antwerp, 466 t.

GRIMSBY.

Week ending February 20th.

Chemicals *(otherwise undescribed)*
Dieppe, 4 cks.
Hamburg, 1 cs. 10 pks.
Malmo, 4 cks.
Rotterdam, 5
Coal Products—
Dieppe, 27 cks.

PRICES CURRENT.

WEDNESDAY, March 9, 1892

Prepared by Higginbottom and Co., 116, Portland Street, Manchester.

The values stated are F.O.R. *at maker's works, or at usual ports of shipment in U.K. The price in different localities may vary.*

	£	s.	d.
Acids:—			
Acetic, 25 °/₀ and 40 °/₀ .. .. per cwt.	7/- & 11/-		
,, Glacial .. .. ,,	50/-		
Arsenic, S.G., 2000° .. .. ,,	0	13	6
Fluoric .. .. per lb.	0	0	3¼
Muriatic (Tower Salts), 30° Tw. .. .. ..per bottle	0	0	10
,, (Cylinder), 30° Tw. .. .. ,,	0	3	0
Nitric 80° Tw. .. .. per lb.	0	0	2¼
Nitrous .. .. ,,	0	0	1¾
Oxalic .. .. nett ,,	0	0	3
Phosphoric, 1750° .. .. ,,	0	1	2½
Picric .. .. ,,	0	0	10¼
Sulphuric (fuming 50 °/₀) .. .. per ton	15	10	0
,, (monohydrate) .. .. ,,	5	10	0
,, (Pyrites, 168°) .. .. ,,	3	5	0
,, (,, 150°) .. .. ,,	1	5	0
,, (free from arsenic, 145°) .. .. .. ,,	1	7	6
Sulphurous (solution) .. .. ,,	2	15	0
Tannic (pure) .. .. per lb.	0	1	2
Tartaric .. .. ,,	0	1	0
Arsenic, white powdered .. .. nett per ton	10	17	6
Alum (loose lump) .. .. ,,	5	5	0
Alumina Sulphate (pure) .. .. ,,	5	0	0
,, ,, (medium qualities) .. .. .. ,,	4	15	0
Aluminium .. .. per lb. 2s. 8d. to	0	3	2
Ammonia, ·880=28° .. .. per lb.	0	0	3
,, =24° .. .. ,,	0	0	1¾
,, Carbonate .. .. nett ,,	0	0	3¼
,, Muriate .. .. per ton	21	0	0
,, ,, (sal-ammoniac) 1st & 2nd .. per cwt.	35/- & 33/-		
,, Nitrate .. .. per ton	40	0	0
,, Phosphate .. .. per lb.	0	0	10½
,, Sulphate (grey), London .. .. .. per ton	10	7	6
,, ,, (grey), Hull .. .. ,,	10	5	0
Aniline Oil (pure .. .. per lb.	0	0	8¼
Aniline Salt ,, ... ,,	0	0	7¼
Antimony .. .. per ton	70	0	0
,, (tartar emetic) .. .. per lb.	0	1	0
,, (golden sulphide) .. .. ,,	0	0	10
Barium Chloride .. .. per ton	7	15	0
,, Carbonate (native) .. .. ,,	3	10	0
,, Sulphate (native levigated) .. .. .. ,,	45/- to 75/-		
Bleaching Powder, 35 % .. .. nett ,,	7	10	0
,, Liquor, 7 % .. .. ,,	2	10	0
Bisulphide of Carbon .. .. ,,	11	15	0
Chromium Acetate (crystal .. .. per lb.	0	0	6
Calcium Chloride .. .. per ton	2	5	0
China Clay (at Runcorn) in bulk .. .. .. ,,	17/6 to 35/-		
Coal Tar Dyes:—			
Alizarine (artificial) 20 % .. .. per lb.	0	0	8¼
Magenta .. .. ,,	0	3	9
Coal Tar Products			
Anthracene, 30 % A, f.o.b. London .. per unit per cwt.	0	1	2½
Benzol, 90 % nominal .. .. .. per gallon	0	2	3
,, 50/90 ,, ... ,,	0	1	9
Carbolic Acid (crystallised 40°) .. .. .. per lb.	0	0	5
,, (crude 60°) .. .. per gallon	0	1	1
Creosote (ordinary) .. .. ,,	0	0	1
,, (filtered for Lucigen light) .. .. ,,	0	0	2
Crude Naphtha 30 % @ 120° C. .. .. .. ,,	0	0	11
Grease Oils, 22° Tw. .. .. per ton	2	5	0
Pitch, f.o.b. Liverpool or Garston .. .. .. ,,	1	14	0
Solvent Naphtha, 90 % at 160° .. .. .. per gallon	0	1	1
Coke-oven Oils (crude) .. .. ,,	0	0	3
Copper .. .. per ton	45	5	0
,, Sulphate .. .. ,,	14	10	0
,, Oxide (copper scales) .. .. ,,	45	0	0
Glycerine (crude) .. .. ,,	13	0	0
,, (distilled S.G. 1250°) .. .. ,,	45	0	0
Iodine .. .. nett, per oz.	0	0	9
Iron Sulphate (copperas) .. .. per ton	1	12	6
,, Sulphide (antimony slag) .. .. ,,	2	0	0
Lead (sheet) for cash .. .. ,,	12	5	0
,, Litharge Flake (ex ship) .. .. ,,	14	5	0
,, Acetate (white ,,) .. .. ,,	25	10	0
,, ,, (brown ,,) .. .. ,,	17	10	0
,, Carbonate (white lead) pure .. .. .. ,,	20	0	0
Nitrate .. .. ,,	20	5	0
Lime, Acetate (brown) .. .. per ton	6	7	6
,, ,, (grey) .. .. ,,	10	0	0
Magnesium (ribbon and wire) .. .. per oz.	0	2	3
,, Chloride (ex ship) .. .. per ton	2	7	6
,, Carbonate .. .. per cwt.	1	17	6
,, Hydrate .. .. per ton.	17	0	0
,, Sulphate (Epsom Salts) .. .. .. per ton	2	19	0
Manganese, Sulphate .. .. ,,	18	0	0
,, Borate .. .. per cwt.	2	15	0
,, Ore, 70 % .. .. per ton	4	5	0
Methylated Spirit, 61° O.P. .. .. per gallon	0	2	6
Naphtha (Wood), Solvent .. .. ,,	0	4	6
,, ,, Miscible, 60° O.P. .. .. .. ,,	0	4	10
Oils:—			
Cotton-seed .. .. per ton	18	15	0
Linseed .. .. ,,	20	0	0
Lubricating, Scotch, 890°—895° .. .. .. ,,	7	5	0
Petroleum, Russian .. .. per gallon	0	0	4½
,, American .. .. ,,	0	0	5½
Potassium (metal) .. .. per oz.	0	3	7
,, Bichromate .. .. per lb.	0	0	3¾
,, Carbonate, 90% (ex ship) .. .. .. per ton	18	10	0
,, Chlorate .. .. per lb.	0	0	7
,, Cyanide, 98% .. .. ,,	0	2	2
,, Hydrate (Caustic Potash) 80/85 % .. per ton	22	10	0
,, ,, (Caustic Potash) 75/80 % .. ,,	21	0	0
,, ,, (Caustic Potash) 70/75 % .. ,,	20	15	0
,, Nitrate (refined) .. .. per cwt.	1	2	6
,, Permanganate .. .. per cwt.	3	10	0
,, Prussiate Yellow .. .. per lb.	0	0	10¾
,, Sulphate, 90 % (ex ship) .. .. .. per ton	9	15	0
,, Muriate, 80 % (do.) .. .. .. ,,	7	17	6
Silver (metal) .. .. per oz.	0	3	5¾
,, Nitrate .. .. ,,	0	2	10
Sodium (metal) .. .. per lb.	0	3	4
,, Carb. (refined Soda-ash) 48 % ..nett per ton	6	2	6
,, ,, (Caustic Soda-ash) 48 % . ,, ,,	5	5	0
,, ,, (Carb. Soda-ash) 48% .. .. ,, ,,	5	7	6
,, ,, (Carb. Soda-ash) 58 % .. .. ,, ,,	6	5	0
,, ,, (Soda Crystals) .. .. .. ,, ,,	3	9	0
,, Acetate (ex-ship) .. .. ,,	16	15	0
,, Arseniate, 45 % .. .. ,,	10	10	0
,, Chlorate .. .. per lb.	0	0	7½
,, Borate (Borax) .. .. nett, per ton.	30	0	0
,, Bichromate .. .. per lb.	0	0	2¾
,, Hydrate (77 % Caustic Soda) (f.o.b.) nett pr. ton (10 ton lots)	11	5	0
,, ,, (74 % Caustic Soda) ,, ,, ,, (10 ton lots)	11	5	0
,, ,, (70 % Caustic Soda) ,, ,, ,, (10 ton lots)	10	5	0
,, ,, (60 % Caustic Soda) .. ,, ,, (10 ton lots)	9	2	6
,, ,, (60 % Caustic Soda, cream) (f.o.b.) ,, (10 ton lots)	8	15	0
,, Bicarbonate .. .. ,,	6	12	6
,, Hyposulphite .. .. ,,	7	15	0
,, Manganate, 25% .. .. ,,	9	0	0
,, Nitrate (95 %) ex-ship Liverpool .. ..per cwt.	0	9	4½
,, Nitrite, 98 % .. .. per ton	30	0	0
,, Phosphate .. .. ,,	15	10	0
,, Prussiate .. .. per lb.	0	0	8
,, Silicate (glass) .. .. per ton	5	7	6
,, ,, (liquid, 100° Tw.) .. .. .. ,,	4	7	6
,, Stannate, 40 % .. .. per cwt.	3	5	0
,, Sulphate (Salt-cake) .. .. per ton.	1	17	6
,, ,, (Glauber's Salts) .. .. ,,	1	15	6
,, Sulphide .. .. ,,	7	15	0
,, Sulphite .. .. ,,	6	12	6
Strontium Hydrate, 100% .. .. ,,	8	10	0
Sulphocyanide Ammonium, 95 % .. .. per, lb.	0	0	7¼
,, Barium, 95 % .. .. ,	0	0	5
,, Potassium .. .. ,	0	0	7¾
Sulphur (Flowers) .. .. per ton.	10	0	0
,, (Roll Brimstone) .. .. ,,	8	0	0
,, Brimstone : Best Quality (nominal) .. ,,	6	10	0
Superphosphate of Lime (26 %) .. .. ,,	2	7	6
Tallow .. .. ,,	26	10	0
Tin (English Ingots) .. .. ,,	93	0	0
,, Crystals .. .. per lb.	0	0	6¾
Zinc (Spelter) .. .. per ton	21	0	0
,, Chloride (solution, 96° Tw.) .. .. ,,	6	15	0

THE

CHEMICAL TRADE JOURNAL

AND

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ATE ADVERTISEMENT

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Communications for the Editor, if intended for insertion in the current week's issue, should reach the office not later than **Tuesday morning.**

Readers are invited to forward items of intelligence, or cuttings from local newspapers, of interest to the trades concerned.

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Prepaid Advertisements of Situations Vacant, Premises on Sale or To be Let, Miscellaneous Wants, and Specific Articles for Sale by Private Contract are inserted in the *Chemical Trade Journal* at the following rates:—

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Advertisements intended for insertion in the current week's issue should reach the office by **Wednesday morning** at the latest.

THE POLLUTION OF THE RIVERS IRWELL AND MERSEY.

THE Bill "to make more effectual provision for prevention of the pollution of the Rivers Mersey and Irwell and their tributaries," may be found printed in another column, and we take this opportunity of pointing out what we consider the assailable portions.

The preamble sets forth that the "polluted and filthy condition of the said parts of the rivers Mersey and Irwell and their tributaries urgently requires improvement," to which we opine there will not be a single dissentient. The newly constituted Joint-committee has commenced to clean the Augean stable, and in their first steps find, as many others have found before them, that the Rivers Pollution Act gave them no substantial aid.

The Salford Corporation is about the only public body in the watershed that has attempted to stop the pollution of the river outside its own domain, and had it pulled the beam out of its own eye before attempting to remove the splinter from the oculars of its neighbours, it might have been more successful in its endeavours. It was rumoured some time ago that sundry paper makers higher up the river were to be indicted as polluters, but as the Local Government Board refused its sanction to prosecute, the cases fell through. This is what the promoters of the Mersey and Irwell (Prevention of Pollution) Bill have sought to overcome, but fortunately the Local Government Board do not see fit to relax its demands, and which is practically the only safeguard the manufacturer possesses of fair treatment.

Clause 3 of the Bill states that any person who causes to fall or flow. . . . into any river. . . . any liquid sewage matter, or any poisonous noxious or polluting liquid proceeding from any manufactory or manufacturing process, shall be deemed to have committed an offence against the Act.

Here is a good field for litigation—poisonous, noxious, or polluting liquid—and who is to be the arbiter to decide what is and what is not "poisonous, noxious, or polluting"? Then again, private manufactories will be placed at a great disadvantage as compared with corporation manufacturing establishments, which is certainly unfair. By the last Public Health Amendment Act, a Corporation has power to compel all manufacturers to sever their connections (so far as manufacturing refuse is concerned) with the sewers, and, in fact, notice has been already given in several instances, so that manufacturers will, no doubt, be speedily called upon to deal with their own refuse independently of the public authority.

A corporation factory, however, gets over the difficulty very easily—it will not give itself notice to disconnect from the sewers, and the particular manufacture carried on will be placed on vantage ground as compared with the private manufacturer. Take the manufacture of sulphate of ammonia,

for instance, as a case in point. At Salford, the spent water from the gas works finds its way into the sewage, and the cyanides from it have been detected in the effluent water from the sewage works. Now what is a private manufacturer in the Salford district to do with such a liquor? Clearly he is placed at a great disadvantage, and the treatment accorded to him should be precisely that which is dealt out to the corporation works. It is to be noted that the saving paragraph in clause 3 relates only to "sewage matter"—another bone of contention for experts.

Manufacturers will notice that clause 8 makes it lawful for any officer of, or other person authorised by the Joint Committee, to enter and examine, and take and carry away samples from any "land, manufactory, or other work or building" where it is probable that any infringement of the Act may take place. This clause adds another to the long list of inspectors under which manufacturers are now suffering. A manufacturer who called at these offices the other day submitted a list of inspectors visiting his works regularly; they were, the Nuisance Inspector, the Medical Officer of Health, the Inspector of Weights and Measures, the Water-works Inspector, the Inland Revenue Officer, the Alkali Act Inspector (often two of them), and now is to be added the Mersey and Irwell Rivers Inspector—where will inspecting end?

The greatest blot on the Bill is, however, the recovering of penalties before a court of summary jurisdiction. It is notorious that many of these cases are not understood by ordinary magistrates; in fact, they have no time to devote to such weighty problems, and the result is to fine everybody and leave the aggrieved party to the tender mercies of clause 9.

We attribute the whole of the failure of the Smoke Acts to the method of their administration, and feel sure that if the Mersey and Irwell is to be purified, it will not be effected by dragging manufacturer after manufacturer into the police courts, where perhaps the main business consists in disposing of a few cases of "drunk."

Manufacturers should endeavour to get a clear and correct rendering of the third section of clause 11, "the term 'solid matter' does not include particles of matter in suspension in water." Anything more senseless than this "interpretation" we cannot conceive. If the water is fairly pure, we cannot imagine a "solid matter" being in suspension indefinitely, and we hold a strong opinion that any solid matter kept in suspension, say by a rapid current, at the point of entry into the stream, ought fairly to come within the exemption.

SOCIETY OF CHEMICAL INDUSTRY.

LONDON SECTION.

A MEETING of the section was held on Monday, March 7th, at Burlington House. Mr. Tyrer, in opening the proceedings, said that the next Annual General Meeting of the Society would be held in London, and although there was evident among manufacturers a growing disinclination to allow their works to be inspected by rivals or possible rivals, yet he trusted a sufficient number would be generous in this respect provided the members did not misuse the opportunity thus presented. He also announced that Mr. William Thorp had been nominated as the next chairman of the section. Mr. Oscar Guttmann, whose name has lately been prominent as the deviser of an improved method for condensing nitric acid, then read an abstract of his paper on "The dangers encountered in the manufacture of explosives." Having first defined what was meant by an explosion, and pointed out that an elevated temperature alone was often less capable of initiating an explosion than a vibration of a sharper and more complex kind, he proceeded to discuss the sources of danger that are characteristic of the manufacture of each class of explosives and the means that could be adopted for their avoidance. The manufacture of gunpow example, was more dangerous than was commonly supposed presence of chlorine in the nitre was objectionable; accide occurred during the grinding of the sulphur, probably on acc the ease with which it became electrified during this proces incorporating mills had also been found a source of risk, altho best type were now constructed so that the runners did not to bed plate. The pressing of the powder between plates of was also not unattended with disadvantages. With regard compounds, gun cotton might be considered the least dar although difficulties might arise from the spontaneous decompo the material during the process of nitration; it should always manufacture be completely immersed in either acid or water. and drying were often somewhat risky proceedings; in the roo the latter was carried out, bare metal pipes for conveying stea inadmissible. The manufacture of nitro-glycerine was less da than that of gun cotton, the cardinal rules to be observed be pure materials should be used, that the mixture should be ke stirred, and its temperature low; the glycerine should be run i and not suffered to be at any time in excess. In the ma dynamite cartridges single stroke presses, which effected th pression at one operation, were faulty in principle inasmuch much work was done upon the dynamite in a given time. G speaking, frozen dynamite was less dangerous than dynamit normal state, although nitro-glycerine accidentally frozen roun and valves had been known to give rise to explosion. On the however, the manufacture of nitro-glycerine and dynamite was d less dangerous than that of gunpowder. The production of sm powder was at present almost exclusively in the hands of gov departments, and a smaller amount of information concerning therefore available. In the author's opinion, lightning rods a generally fixed to buildings in which the manufacture of explos carried out, were of doubtful utility, as well-authenticated i had occurred where such buildings had been struck by light spite of the presence of lightning conductors the good cond which had been ascertained by actual testing only a short time In the discussion which followed, Mr. Phillip suggested the paraffin oil to aid the separation of nitro-glycerine and the sp liquor, and called attention to Dr. Lodge's statement that effici tection from lightning could be obtained by enclosing the buildi protected in a sort of metal cage, the material for which might vanised iron tape. Mr. Mosenthal, speaking of the capricious in which explosives sometimes behaved, said that the "bar test" which had originated with Dr. Dupré, and had been fo severe for many explosives, had been primarily intended detection of the dangerous character of chlorate mixtures. sequent speaker drew attention to the fact that the operatio Explosives Act had been so effective that it had reduced the nu deaths caused by explosions in manufactories from 35 to abou per year, and that last year only one death had been recorde Hehner jocularly remarked that although owners of works too precautions to protect those in their employ, yet they seemed no objection to risking the lives of unhappy analysts, to jud some of the samples which he saw from time to time. He opinion that the conditions generally insisted upon, with wh glycerine was supposed to comply, were to a great extent b obsolete ideas; he had not found that the presence of such im as chlorine and aldehydic substances, and of organic bodies whi non-volatile, although present in distilled glycerine, and were p polymers of that substance, had the detrimental effect wh generally ascribed to them. Dr. Guttmann, in replying, dwel general utility of what had been termed the "broomstick test" consists in striking a glancing blow upon the explosive, placed floor, with an ordinary broomstick), and said that Dr. Du introduced it with a good deal of sarcastic effect on the occas paper on kinetite being read at the time when it was sought t duce this explosive into the United Kingdom.

Mr. Bevan then gave a short account of a paper by himself Cross and of another by Drs. Evans and Wirtz, in which the con arrived at by Professor W. N. Hartley on the question o presence of sulphuric acid in drawing paper," were traverse fessor Hartley had observed that certain drawing papers by m repute gave an acid reaction with litmus and helianthin, a aqueous extract contained a sulphate. As the presence of free s acid could not but be injurious to delicate pigments, the allega a serious one from a paper maker's point of view. Mr. Bevan however, that the phenomena observed by Professor Hartley reality due to sulphate of alumina, present as an ingredient of and that there appeared to be no possibility of sulphuric acid re in the fibre in the free state. One of the makers affected (Mr. in commenting on the communication said that in his case s acid could scarcely be present as it was not used in the manu The discussion ended in a complete exoneration of the paper and after the attention of the meeting had been called to a no

:e (a detailed account of which appeared in our issue of January) in which the weights were placed on the pan from outside by a series of forked levers each capable of distinct movement, ably adjourned.

MANCHESTER SECTION.

onthly meeting of this section was held on Friday, the 11th ıe chair was taken by Mr. Harry Grimshaw at 7 p.m. The read a letter from the Manchester Corporation in reply to by the Society's Committee, asking for a definition of the building" in the Corporation Bye-laws. The letter was of an e nature. The matter, it was stated, had been put before the l Committee of the Manchester Chamber of Commerce.

sson then read a short paper, which was really a continuation iscussion on Messrs. Barrow and Grimshaw's papers. The nts alluded to were the action of hydrated ferric oxide on nd the value of Wanklyn's albuminoid ammonia test. In regard mer Mr. Sisson said that while the ferric oxide was supposed an oxygen carrier, there was to the best of his knowledge no in support of this statement, and again it was doubtful if there h oxygen to be carried. With the exception of a few of his riments in this direction he believed no determinations of the f oxygen in sewage had been made. He also objected, on the of some of his own experiments, to the statement made by that urea was not decomposed by alkaline permangante. ards said that his experience was that the ferric oxide was but not re-oxidized. Mr. Birch referred to his machine, 40 of e said would cure the Salford trouble. Mr. Hart said, as a urer, he was anxious to learn what standard of purity would ed by the Joint Rivers Committee. As far as regards the effluent which Mr. Birch said he obtained, and with which a neighbouring public-house had diluted their whisky, he those men were entitled to the hearty sympathy of the meeting, l had some of the effluent in question, and found it to contain rge amount of albuminoid ammonia, and also to putrify on Mr. Bell stated that the Salford authorities would never at 9 parts per 100,000 of suspended matters, and as there was difference of opinion about the albuminoid test he should like bout the remodelled test to be substituted by those who criti- The chairman briefly summarised the discussion, and the terminated. There were about 25 present.

THE INSTITUTE OF CHEMISTRY.

ANNUAL GENERAL MEETING.

as mentioned in our previous report, the annual general eting of the Institute of Chemistry was adjourned from March 1st, to Friday, March 11th, in order that those whose votes were endangered by the action of the late and registrar, might be enabled to fulfil every jot and tittle v as discovered and laid down by that eminent exponent of nd decorous procedure. The meeting was begun fairly punctu- o'clock by an opening statement of the president's, to the t legal advice had been taken during the interval upon the whether members who had not paid their subscriptions for nt year were entitled to vote. The opinion, stripped of amounted to this: Members who had not paid their sub- s for the current year were not entitled to vote personally or at the annual meeting itself, but could vote in the election of cil. Thus not only was Mr. Grove's contention, which applied votes cast for the election of the council, found to be a mere st, but an unpleasant doubt was cast upon the various resolu- t had been passed at the first portion of the meeting, as the *ns* of those voting for such things as the adoption of the report ouncil, the appointment of the censors, the selection of the rs and the like, was altogether in doubt. The meeting wisely to ignore such pettifogging issues, being thoroughly content president's common-sense decision, backed as it now was by legal advice procurable. Time was wasted, however, by Mr. who took upon himself to dispute the president's ruling until buked by Mr. Carteighe, of all persons, whose sympathies and oice have hitherto been consistently at the service of the ial party. A further attempt to father the report of the last which appeared in this journal upon Mr. W. Thomson, and v that he had acted in a manner inconsistent with his duties as r, similarly resulted in Mr. Friswell's discomfiture. [The *l Trade Journal* has its regular sources of information, and has to avail itself of channels of communication the use of which a breach of trust. Moreover, the insinuation against Mr. is most offensive.—Ed. *C. T. J.*]

-quarters of an hour having been thus spent, the meeting was d until half-past seven, when it was expected that the report of the scrutineers would be ready. On the return of the members, dyspeptic from the hasty consumption of dinner, they were appalled to find that at least another hour must elapse before the result could be known. Even this proved an under-estimate, for it was not until close upon half-past nine that the momentous report was delivered. It was a disappointment to those who had worked hard and amid persistent misrepresentation and abuse, to find that that fatal sluggishness which has at all times distinguished too many members of the Institute of Chemistry, had again prevailed, and that they were defeated by a neck, the professorial nominees coming in by a small majority. Below is a list of the names and votes of the successful and unsuccessful candidates. The council as now elected: *President*, Tilden, 576. *Vice-Presidents*, Bell, 560; Carteighe, 310; Frankland, 440; Groves, 397; Ramsay, 321; Reynolds, 319. Unsuccessful candidates: Cassal, 276; Macadam, 267; Tate, 268. *Treasurer*, Howard, 578. *Ordinary Members:* Adams, 570; Allen, 566; Clowes, 420; Dupré, 566; Friswell, 302; Greenaway, 300; Hehner, 563; Helm, 565; Hewitt, 554; Hodges, 569; Hughes, 570; Kinch, 300; Machin, 300; Meldola, 322; Morley, 305; Page, 317; Plympton, 305; Smithells, 334; Stevenson, 553; O'Sullivan, 564; Teed, 568; Thomson (J.M.), 323; Thorp, 327; Thorpe, 341; Tyrer, 547; Voelcker, 567; Wright, 570. Unsuccessful candidates: Blyth, 283; Dibdin, 278; Harland, 270; Huson, 264; Jones, 272; Kingzett, 265; Stead, 273; Stock, 263; Thomson (W.), 277.

Those names having more than 500 votes in the above list, of course, belong to Fellows concerning whose eligibility nearly everyone was agreed, and for whom therefore both parties voted. A few, like Profs. Frankland and Clowes, received a mixed vote for personal reasons. Even including these, however, the average number of votes for the official nominees is 332, while that for the unofficial candidates is 271. These figures show that the minority—"the small and noisy party," as their enemies called them—in spite of all the disadvantages of hasty organisation, represents no less than 45% of the total number of votes.

It is to be hoped, and we believe that there is reason for so doing, that the professorial party which has succeeded in getting in "by the skin of its teeth," will realise that it by no means represents the views of the whole of the profession, that it is in office upon sufferance—many members with ill-advised long-suffering having decided to give it one more chance, in the hope of speedy reform—and that should it fail to take warning by its narrow escape, it may reckon on a decided and final banishment when its applies for the suffrages of the Fellows at the next election.

After the result had been announced, Mr. Groves offered an all-too-tardy apology for the mischievous and highly irregular manner in which he had acted. What he has done may be condoned, but will not be forgotten very soon for all that. A thoroughly well-deserved vote of thanks to Dr. Tilden for the admirable manner in which he had acted as chairman, in very trying circumstances, was proposed, and carried with acclamation, bringing a memorable meeting to an appropriate close.

PAPER BARRELS.

THE idea of substituting paper for other and more brittle substances in the manufacture of various articles subject to rough usage is an old one. Many years since it was proposed to make pipes of paper by rolling prepared sheets of that material round a core, and pipes were so made. A few years ago the same idea was reproduced in paper bottles, but in neither case does commercial success appear to have attended these innovations in this country. Only recently does it appear to have occurred to the inventive mind to use the paper pulp itself in the manufacture of articles of cylindrical form, or, more correctly speaking, only recently does success appear to have attended this method of manufacture, the reason for which will shortly be seen. Now, however, we have paper barrels of various kinds and sizes made direct from the pulp by an ingenious process invented by Mr. J. R. Thame. The present process was experimentally begun about four years since, and has been gradually developed into a practical manufacture. In this process, the materials used are waste-paper, and any waste fibrous substances. After being sorted the materials are fed into a beater working in a tank of water, where they are gradually reduced to a pulp. This pulp, greatly diluted with water, is then fed to a machine in which it is carried by an endless travelling blanket under a series of cylinders, upon which the pulp is deposited, the deposition going on, under a slight pressure, until the required thickness of the barrel-body is reached. An ingeniously contrived contractable core encases the cylinder, and on to this the pulp is fed, and when the body has been formed it is removed from the cylinder and taken, still on the core, to the drying-room. It is this facility for removing the barrel-body from the depositing cylinder by the intervention of the core which renders the process successful. It only requires about four minutes to

form the body, which takes about a day to dry. When dry the bodies are trimmed up and the bottoms and heads fitted in. All the parts are waterproofed by being dipped in a heated mixture of resin and resin oil. There is no waste whatever in the manufacture, as the cuttings and trimmings at every stage are returned to the beaters to be used over and over again. Bulged barrels are made in a hydraulic shaping-press. The present plant is equal to an output of 300 barrels per day of 24 hours, and the products are being placed on the market and have the approval of users. The process is both interesting and practical, and promises to add one more to our numerous industries.

Official Memoranda.

(From the Board of Trade Journal.)

THE PRODUCTION AND CONSUMPTION OF GAS IN THE PRINCIPAL EUROPEAN CITIES.

A VOLUME has recently been issued from the Government Printing Office at Washington containing the reports received from the Consuls of the United States in different foreign countries in answer to a circular from the Department of State as to the gas industry in the various countries.

The following particulars with regard to the chief European cities are taken from the report in question :—

St. Petersburg.—The city of St. Petersburg, numbering, according to the latest estimate, 1,000,000 inhabitants, has several gas companies in active operation at the present time. The old gas company, as it is still called, was established in 1835, and manufactures gas from bituminous coal. These works comprise 242 retorts, with an average of 7 retorts to each furnace, 1 Beale exhauster, 6 gas-holders with a total capacity of 750,000 cubic feet, and about 3,000 gasometers. The gas production is 180,000,000 cubic feet. There are 20 gas motors, ranging from 4 to 10 horse-power. The aggregate length of the mains is 28 miles, with pipes varying from 2 to 30 inches in diameter.

The Metropolitan Gas Lighting Company of St. Petersburg supplies a large portion of the city with coal-gas, using 62,450 tons of coal per year. The price for lighting the streets for an aggregate of 3,200 hours has been £3 0s. 5d. per lamp. For Government buildings the price has been 6s. 1d., and for private consumers 7s. 1d. per 1,000 cubic feet. Recently the company has reduced these prices to 4s. 8d. for technical purposes, 5s. 5d. for private consumption. These works contain three groups of condensers, six ordinary scrubbers, two "Standard" scrubbers, 32 purifiers, six gas-holders with a capacity of 2,000,000 cubic feet, five regulators, five gas-meters, and six steam engines. The gas production in 1887 was 637,496,200 cubic feet. There were 7,852 street lamps, 120,524 private burners, and 72 gas motors aggregating 319 horse-power. The total length of the gas mains is about 165 miles.

The gas works of Vassili Ostroff, an island on the north side of the river Neva, and forming a portion of the city of St. Petersburg, furnish a large portion of the gas for the inhabitants of the island. These works contain nine Biley's exhausters, and manufacture gas from coal in the usual manner. The returns from these works consist of 44,469 tons of coke, 2,893 tons of tar, and 5,416 tons of ammoniacal water. The number of consumers is about 3,200, with an equal number of gasometers. The aggregate length of the main is about 27 miles.

The gas works of the Wiborg and old St. Petersburg portion of the city of St. Petersburg belong to a limited company and manufacture gas from Newcastle coal, the quantity of coal used being 7,717 tons per annum. The gas production in 1888 was 73,128,630 cubic feet. There were 1,457 street lamps and 10,500 private burners in the same year. The gas works of the Marshall Academy belong to the same company, and from both of these works there are obtained annually 5,152 tons of coke and 302 tons of tar.

In addition to the cities and towns enumerated above, emyloying gas for lighting and heating purposes, there are about 40 railway stations in the Empire lighted either with coal-gas or petroleum-gas, and about 160 gas manufactories established in separate buildings for the use of factories, stores, banks, and other private enterprises of various descriptions.

The laws of Russia forbid the manufacture and use of water-gas, on the ground that the gas is injurious to health. There is a special article in the patent laws of the country to the effect that no mechanical device, nor any chemical combination producing articles injurious to the health of the people are patentable, and if patented under disguise or ignorance of this fact the patent becomes invalid, Many parties have made repeated efforts to introduce water-gas in Russia, but all such applications have been rejected, invariably meeting with the unanimous opposition of the Imperial Society for the preservation of Health.

Berlin.—In the city of Berlin there are two gas companies (1.) City Gas Company, owned and operated by the city ; (2.) The Continental Gas Association, owned and operated by a company.

The former company has four separate gasworks in the c latter company has three separate gasworks in Berlin and sub

It appears that privileges were granted to the English co far back as 1827. By contract made with the town of Sch 1854, this company has the exclusive right to lay pipes in tha of Berlin, which has since been acquired from Schonberg privileges may to a certain extent account for the difference between the gas supplied by the city works and that supplie English company.

During the fiscal year ended March 31st, 1889, there we 4,000,000 cubic metres less gas used in the city of Berlin th preceding year. This decrease is supposed to be due to the of the growth of electric lighting and especially to the success of the lamp makers in producing lamps with larger and bette

The number of electric lights in use in Berlin during the ye March 31st, 1889, was 66,650.

During the calendar year 1887 the city of Berlin consume tons of petroleum, and in the year 1888, 54,138 tons, or an in 15 per cent.

The quantity of gas produced by the city gasworks during 1889 was 90,000,200 cubic metres.

The number of jets fed by the city gasworks was: Public private, 798,631 ; gasworks and offices, 3,309 ; total, 819,449.

The quantity used by the public lights was 11,489,208 cubi by the private lights, 68,608,759 cubic metres.

The city gasworks used 314,264 tons of coal from the Sile fields, the product in gas for each ton of coal being 287 metres.

The length of the net work of pipes used by the city gasw 693,493 metres.

The value of the gas used in gasworks and bureaus was est 13½ pfennigs per cubic metre. The value of the gas used purposes than lighting was estimated at 12·8 pfennigs per cub

The value of the gas used for lighting was estimated at 16 per cubic metre.

The total income of the city gasworks was as follows :—D year 1889, from gas, 11,552,591 marks ; use of gas metres, coke, tar, &c., 4,443,357 ; total, 16,264,273.

The total expense of the city gasworks during the same ye follows :—cost of coal, 5,614,245 marks ; firing, 701,626 ; material, 10,596 ; wages, 588,918 ; interest on plant, 884,270 expenses, taxes, insurance, &c., 3,414,789 ; total, 11,214,444.

The figures show an excess of receipts over expenses of 5,04 marks.

There are no official statistical data at hand respecting th and expenses of the English company which supplies one-thi gas consumed in the city of Berlin.

Paris.—The gas company known under the name of *C Parisienne d'éclairage et de chauffage par le gaz*, which has the mission to furnish the city of Paris with gas, was founded in 1855. The capital subscribed amounted to £3,377,500., div 336,000 shares at £10. 1s. each. These are worth no £52. 1s. 8d.

The total receipts for the year 1889 amounted to £4,247 which £3,243,410. were for gas, £677,924. for coke, and £ for other by-products. The expense amounting to £2,645,9 prised £847,379. for coal, £175,483. for labour, £63, engineers and salaried working staff ; £42,535. for the central tration, £12,062. for the direction, £361,201. for redem capital, £273,046. for municipal charge, including the tax o cubic metre.

The net profits for the year amounted to £1,588,229., £1,019,281. go to the stockholders, and £360,614. to th Paris. The dividend for the year was £3. 2s. 6d.

The gas is manufactured from coal by the ordinary proce assayed every day before delivery as regards its lighting po purification by company agents, and also by agents appointe city authorities.

According to contract, the gas delivered for consumptio Parisian gas company must be perfectly purified, and its lightin under a pressure from 2 to 3 millimetres of water, and an aver sumption of 105 litres of gas per hour, be equal to the light o burning 42 grammes of pure colza oil per hour.

The report of the Paris gas company for 1889 showed that sumption in the year amounted to 312,000,000 cubic (11,013,000,000 English cubic feet).

The annual consumption of gas in Paris has gone 218,813,875 cubic metres in 1879 to 297,258,070 cubic m 1888.

annual consumption of gas rose during the same period for the of France from 467,500,000 cubic metres in 1879 to 628,000,000 metres in 1888.

number of subscribers to the Paris Gas Company for 1889 was 19, an increase of 11,604 over the year 1888.

substitution of electric lighting in a number of theatres, public ishments and thoroughfares, has been compensated by the increased f gas for domestic purposes, and the day consumption now ls 26 per cent. of the total, and equals one-third of that in the dark

e Paris Gas Company delivers the gas used for public lighting at le of 3s. 5d. per 1,000 cubic feet, and for private use at the rate 8d. per 1,000 cubic feet.

e apparatus which permits the use of gas in kitchens (cooking , ovens, gridirons, &c.), in dressing rooms, kettles and bath s, in private apartments (stoves) are becoming more and more ntly used.

e fact that in Paris one-fifth of the gas supplied by the gasworks is ned during the day indicates the importance of consumption other for lighting purposes.

e men in charge of the furnaces are paid 2s. 8d. per 1,000 kilo- nes coal; they are on duty 12 hours each day, and their daily gs are from 9s. 7d. to 12s. 1d. Coal carriers and cartmen are rom 3s. 4d. to 4s. 2d. for a day's work of ten to twelve hours.

e coal used in the manufacture of gas by the Paris company is ed in France, Belgium, England, and Germany at an average of 12s. 1d. to 14s. 7d. per ton.

ssels.—Brussels has its own gasworks, maintained by the ipality. The suburbs are supplied by the Company General and ial Continental Gas Company.

is obtained by the decomposition of coal by heat. The coal is l in angular cylinders, holding about 200 lb. of broken coal. The passed from the cylinders into coolers, is then purified and ready e. Two hundred pounds of coal yield on an average about 25 metres of gas, 8 lb. of coal tar, and 2⅞ bushels of coke. About ird of the coke thus obtained is employed in heating the cylinders, mainder is sold for domestic use.

candle power is 7½ candles, or 105 quarts of gas per hour. ximate annual output of the city of Brussels, 14,226,787 francs. er of consumers, 19,152.

price of gas differs more or less according to locality, varying 10 centimes per cubic metre, as follows.

the city of Brussels, day consumption, 10 centimes per cubic ; night consumption, 15 centimes per cubic metre. The sub- consumers of Etterbeck, Forest, St. Giles, Ixelles, Kochelberg, beck and Uccle, 15 centimes per cubic metre. St. Jean-Ten- e, 18 centimes; Schaerbeck, 20 centimes; and Laeken, 25 nes per cubic metre.

ges paid to workmen employed in the Brussels gasworks vary 3 to 5 francs per day for 11 hours' work. In the provinces of nt, Hainant, and Namur, 11 and 12 hours' labour is exacted for varying from 2 to 4·50 francs per day.

e.—The Anglo-Romano Company for the lighting of Rome have onopoly of supplying the city both with gas and electricity for es of illumination.

y have two gasworks, one on the Via dei Cherchi, and one on ia Flaminia. The process described is that employed at the works on the Via dei Cherchi, but it is substantially the same at

coal used is from Newcastle, mixed with 5 per cent. of Liver- annel coal, and costs from £1. 5s. 9d. to £1. 6s. 7d. delivered works. At this price the company has a contract which has me to run, although the market price has advanced to about . 3d. per ton.

retorts used are of clay, and measure 21½ in. wide, 14 in. high, ft. 6 in. long. They are made in Italy, are much better than the manufacture, and are equal to the English, but cost less. They ed in groups of seven and eight around the furnaces. There furnaces that heat 562 retorts. Each retort has a capacity of 160 353 lb.) and is charged and drawn by hand.

he furnaces are duplex, the invention of Mr. Walter R. Jones, ineer of the works, who has secured patents on them in Europe United States. This pattern of furnace has been in use since and has given excellent results, all the regenerative furnaces been transformed in preference.

number of public gas lights in Rome in 1888 was 6,033, the consumption of gas was 115,650,000, and private consumption ,000 cubic feet. The cost per 1,000 cubic feet for public con- n was 5s. 7d., for private 6s. 7d.

ve hours constitute a day's labour, and the wages paid are as follows:—Head mechanics per day, 4s.; mechanics and sts, 2s. 10d.; superintendent of firemen, 4s.; firemen's , 3s. 7d.; firemen, 3s. 2d.

For good conduct a bounty is given to the firemen's corporal of 8s. 1d. A pension of 4s. 2d. per week is paid to the widows of workmen so long as they remain widows.

Constantinople.—Gas has been in use in the city of Constantinople for the last 30 years, but was limited to one part of the city, namely, Pera, and is the residence of all Europeans and foreigners in general, as well as of all the ambassadors, ministers, consuls, &c.

There are two gas companies in Constantinople. The first is a Turkish company, under the general management of and belonging to the Imperial Turkish Government, and is called Imperial Gas Works. The factory of this company is situated in Dolma Baghtché, a suburb on the Bosphorus, and furnishes gas for the use only of Pera, the Imperial palaces on the Bosphorus, the lower end of Pera, which is called Galata, and of one or two villages on the Bosphorus.

The second company is a Belgian-German concern, which obtained the necessary concession from the Turkish Government about two years ago, and is called *Société Ottomane pour l'Eclairage de la ville de Constantinople*. This company has established a factory at the Seven Towers, on the Sea of Marmora, and has the privilege of supplying gas only to the other side of the city of Constantinople, properly called Stamboul, which is largely inhabited by the Turks, including the suburb of Eyoub in the Golden Horn.

It is impossible to ascertain the amount of money invested in the industry by the first Government company. The amount invested by the second, the Belgian-German, is £152,078.

Process of manufacture: The factory of the Belgian-German company was constructed by Mr. Kloenne de Dortmund. It has a gasometer of 12,000 cubic metres, with furnaces and four batteries, with eight retorts each. The other machinery is in proportion.

The machinery hall is 90 metres long by 15 metres wide, the furnace hall is also 90 metres long by 15 metres wide.

Brilliancy of gas, 12 to 14 candles.

The approximate annual output is 1,000,000 cubic feet in Stamboul, and 3,000,000 cubic feet in Pera and Galata.

Number of consumers: The Belgian-German company has about 10,000 to 12,000 flames for the present. No statistics can be obtained from the Government company.

The price of gas per 1,000 cubic feet is 7s. 4d., with 25 per cent. discount for public fixtures.

The use of gas stoves for heating and cooking is quite limited.

The wages of the employés of the Belgian-German company range as follows: Director, £1,000. per annum; chief engineer, £680.; quartermaster, £165.; other employés, £40. The hours of labour are about 12, with rests two or three times during the day or night.

The material used is English Newcastle and Cardiff coal. The price is £1. 6s. 3d. to £1. 7s. 3d. per ton.

Christiania.—Christiania, the capital of Norway, situated at the inner end of the Christiania Fiord, has a population of 145,000.

The Christiania gas works belong to the community. The amount invested by the city is reported to be £91,960.

The gas produced is the ordinary coal-gas.

The power of gas is equal to 16 candles.

The annual output is 167,000,000 cubic feet. Number of consumers, 3,205.

Price of gas for illumination, 4s. 9d. per 1,000 cubic feet, with 5 or 10 per cent. discount for consumers, in proportion to quantities used. Price of gas for cooking and technical purposes, 3s. 2d. per 1,000 cubic feet without discount.

Number of gas stoves for heating, 20; cooking, 300; gas motors, 13.

Wages of employés, from 2s. 3d. to 3s. 4d. for 12 hours of labour per diem.

New Pelton coal from Newcastle. The cost in 1889, 14s. English per ton.

Copenhagen.—In the year 1886 Danish gas works manufactured 980,631,720 cubic feet of gas. Out of this amount Copenhagen produced 594,517,000 cubic feet, or about 60 per cent. of the whole kingdom's gas, and 1½ times more than all the other gas-works in Denmark together. If the suburb of Frederiksberg be counted as part of the capital, Copenhagen consumes more than twice as much gas as the rest of the country.

Of gas manufactured in Denmark, 83·8 per cent. is produced by municipal gas works, and only 16·2 per cent. from private works. A steady increase has taken place during the last few years. In 1881 the production was 705,731,600 cubic feet, and the increase has therefore been 38·9 per cent. The increase in the gas production at the Copenhagen gas works was during the same period, 1881-86, 27 per cent., or about 4½ per cent. a year. The other municipal gas works had at the same time an increase of 63 per cent., while private works had about 60 per cent., equal to a yearly increase of about 10 to 12 per cent.

Berne.—The money invested in the gas works at Berne amounts to 1,728,569 francs.

Process of manufacture: gas is manufactured exclusively in retort stoves. The manufacture of carbonated gas is not known in Switzerland.

It is prescribed here that a gaslight consuming 150 litres per hour must have at least a power of 16 Amplacetats lamps.

Approximate annual output: in 1889, 1,872,470 cubic metres gas were produced at Berne.

At the end of 1889 Berne had 1,741 gas meters for lighting purposes, 32 for machines, and 244 for gas stoves; total consumers, 2,027.

Price of gas for illuminating purposes, 25 centimes per cubic metre.

The use of gas stoves is annually increasing. The price of gas for this purpose and machines is 20 centimes per cubic metre.

Wages: stokers receive from 3·60 to 4 francs for nine hours work; still their presence is required for 12 hours, of which time they have three hours idle.

For the manufacture of gas, Saar (Germany) and St. Etienne (France) coals are now used, with boghead of Autun (France), Tyne boghead (England), and pitch coal from Bohemia to gain the prescribed light power.

Price of coal at the gas works, Berne: Saar, per 100 kilogrammes, 3·24 frs.; St. Etienne, 3·22 frs.; French boghead, 7 30 frs.; Tyne boghead, 6·50 frs.; Bohemian pitch coal, 4·70 frs.

Greece.—Cities using gas: Athens, Piræus, Patras, and Corfu.

Names of companies: Athens, *Compagnie d'Eclairage pour le Gaz pour la France et l'Etranger, Siege social*, Paris. Piræus, *Société Belge*. Patras, the municipality is owner of the gas works. Corfu, English company.

Amount of money invevsted in the industry: Athens, 2,000,000 frs; Piræus, 1,050,000 frs.; Patras, 800,000 frs.

The process of manufacture is by distillation of coal.

The candle power of gas is 5·16 and 10 candles, counted in carcels.

The approximate annual output cannot be given.

Number of consumers: Athens, 1,400; Piræus, 350; Patras, 300.

Price of gas per thousand cubic feet: Athens, 37 lepta* the cubic metre; Piræus, 35; Patras, 27.

Some gas stoves used for cooking, none for heating.

Wages, 3 frs. to 3·50 frs. per day. Hours of labour, 9 to 10.

The material used in the manufacture of gas is English coal—Cardiff and Newcastle; about 35 drachmas† the ton delivered in the harbours of Piræus, Corfu, or Patras.

THE RIVERS IRWELL AND MERSEY BILL FOR THE PREVENTION OF POLLUTION.

Seeing that this Bill is of the highest importance to manufacturers we have reprinted the Bill intact for the convenience of those likely to be affected by the same.

A BILL

To make more effectual provisions for prevention of the pollution of the Rivers Mersey and Irwell and their tributaries.

WHEREAS by order of the Local Government Board dated the eighth day of May one thousand eight hundred and ninety-one made under the Local Government Act 1888 and confirmed by Parliament a Joint Committee consisting of representatives of the counties of Lancaster and Chester and of the county boroughs of Bolton Bury Manchester Oldham Rochdale Salford and Stockport has been constituted and incorporated by the name of the Joint Committee of the Rivers Mersey and Irwell (hereinafter referred to as "the Joint Committee"):

And whereas by the said order power is conferred on the Joint Committee to enforce the provisions of the Rivers Pollution Prevention Act 1876 (subject to the restrictions in that Act contained) in relation to specified parts of the rivers Mersey and Irwell and the tributaries thereof:

And whereas the restrictions contained in the said Act are such as to preclude effective action by the Joint Committee for the improvement of the condition of the said parts of the rivers Mersey and Irwell and their tributaries:

And whereas the polluted and filthy condition of the said parts of the rivers Mersey and Irwell and their tributaries urgently requires improvement, and with that view it is desirable and expedient to confer such powers on the Joint Committee and to make such provisions as are in this Act mentoined:

And whereas the objects of this Act cannot be attained without the authority of Parliament:

MAY IT THEREFORE PLEASE YOUR MAJESTY,

That it may be enacted AND BE IT ENACTED by the Queen's Most Excellent Majesty by and with the advice and consent of the Lords Spiritual and Temporal and Commons in this present Parliament assembled and by the authority of the same as follows (that is to say):

1.—This Act may be cited as the Mersey and Irwell Joint Committee Act 1892.

* 12 lepta equal 1d. Eng. † 1 drachma equals 9d. Eng.—Ed *C. T. J.*

Solid Matters.

2.—Every person who—

(A) puts or throws or causes to be put or thrown or to fall;

(B) knowingly permits to be put or to fall or to be carried;

(C) causes or knowingly permits to be put in such a positio liable to fall or to be carried

into any river or stream within the jurisdiction of the Joint C the solid refuse of any manufactory manufacturing process mine pitshaft or quarry, or any ashes cinders or clinkers, or ing rubbish, or any sludge or any solid sewage matter, shall to have committed an offence against this Act:

Provided that notwithstanding anything in this Act con person shall be deemed to have committed an offence against t doing or causing to be done any of the following acts (that is

(1) For constructing in or across any such river or stream ing weir dam or other permanent work with necessary coffer-dams which but for the passing of this Act he wo legal right to construct: or

(2) For pitching or depositing stones or any other suitab materials (not likely to be washed or carried away by or current rising to the line of an ordinary flood) at t on the bank of any such river or stream for the e *bonâ fide* purpose of reclaiming land washed away by of any such river or stream or of supporting or pro side or bank of any such river or stream or of repairin or of erecting or repairing any bridge or any buil sewer or watercourse upon or within the banks of any or stream or the slopes or walls thereof at or conveni point at which the same shall be so pitched or deposit

(3) For putting into any such river or stream any sand o other natural deposit which shall have flowed fro deposited by the current of any such river or stream.

Polluting Liquids.

3.—Every person who causes to fall or flow or knowing to fall or flow or to be carried into any river or stream withi diction of the Joint Committee any liquid sewage matte poisonous noxious or polluting liquid proceeding from any m or manufacturing process, shall (subject as in this Act men deemed to have committed an offence against this Act.

A person other than a sanitary authority shall not be g offence under this section in respect of the passing of sewage a river or stream along a drain communicating with any sew ing to or under the control of any sanitary authority provid the sanction of the sanitary authority for so doing.

4.—On the application of any sanitary authority or of facturer or other person who at the passing of this Act are mitting any offence within the meaning of the last precedi the Joint Committee may, if having regard to all the circu the case they think proper, by Order grant time to such autho facturer or person for executing any works or doing any act to prevent the commission of the offence; and during the tim in the Order (which may be extended by a subsequent Ord ceedings under the said section shall be taken by the Joint against the authority or person named in the Order.

5.—The Joint Committee shall not take proceedings und in the case of any poisonous noxious or polluting liquid from any manufactory or manufacturing process unless they a that means for rendering harmless such poisonous noxious liquid are reasonably practicable and available under all stances of the case.

Penalties and Procedure.

6.—Every person who commits an offence against this Ac no other penalty is specified shall be liable for the first penalty not exceeding twenty pounds, and for a seco subsequent offence to a penalty not exceeding fifty poun penalty not exceeding forty shillings for every day on offence is continued after conviction.

7.—Offences under this Act may be prosecuted an recovered in a summary manner before a Court of summary by the Joint Committee or by the clerk or other officer Committee authorised in that behalf.

All penalties recovered under this Act shall be carried t of the common fund of the Joint Committee.

8.—For the better enforcement of the provisions of this be lawful for any officer of, or other person authorised by Committee at any time to enter on and examine any land or other work or building where it is probable or possibl infringement of this Act may take place, and to take and samples of any liquid passing into any river or stream jurisdiction of the Joint Committee which he may suspect contain liquid sewage matter, or to be a poisonous polluting liquid.

Any person who obstructs or molests any such officer or other rson shall be liable to a penalty not exceeding Five pounds.

9.—Any person aggrieved by any conviction or determination of a art of summary jurisdiction under this Act may appeal to the next acticable Court of Quarter Sessions holden in or for the county rough or place where the matter of appeal arises.

10.—All the powers and provisions of this Act are in addition to d not in derogation of any other powers possessed by the Joint mmittee by common law or under the provisions of any Statute or der confirmed by Parliament, and the Joint Committee may ercise all or any of such other powers as if this Act had not been ssed.

Nothing in this Act shall prejudice or in any way affect or curtail the ht of any sanitary authority or of any conservators or other public dy or of any individual to continue or to commence proceedings ainst any person or body of persons in respect of any pollution of the ers Mersey or Irwell or any tributary thereof respectively.

11.—In this Act :—

The term "person" includes a sanitary authority and any other body of persons whether corporate or not corporate :

The term "stream" includes canalised streams brooks and water courses :

The term "solid matter" does not include particles of matter in suspension in water.

12.—All the costs of and incidental to preparing and obtaining this ct as taxed by the taxing officer of one of the Houses of Parliament hall be paid by the Joint Committee out of their common fund.

PETROLEUM EXPORTS FROM U.S.A.

S. G. BROCK, chief of the Bureau of Statistics, submits the following statement of the exports of mineral oils from the United tates for the month of January, 1892 :—

	Gallons
CRUDE PETROLEUM.	
Total for January, 1892	10,178,020
Total for January, 1891	9,145,754
Total for 7 months ending January 31, 1892	68,794,228
Total for 7 months ending January 31, 1891	62,741,201
NAPHTHAS.	
Total for January, 1892	615,453
Total for January, 1891	535,573
Total for 7 months ending January 31, 1892	8,177,526
Total for 7 months ending January 31, 1891	8,813,560
ILLUMINATING OILS.	
Total for January, 1892	38,875,431
Total for January, 1891	35,749,772
Total for 7 months ending January 31, 1892	329,521,630
Total for 7 months ending January 31, 1891	366,947,526
LUBRICATING OILS.	
Total for January, 1892	2,874,957
Total for January, 1891	2,248,484
Total for 7 months ending January 31, 1892	20,065,460
Total for 7 months ending January 31, 1891	19,651,822
RESIDUUM.	
Total for January, 1892	21,840
Total for January, 1891	169,428
Total for 7 months ending January 31, 1892	280,938
Total for 7 months ending January 31, 1891	1,058,578
TOTAL EXPORTS.	
Total for January, 1892	52,565,701
Total for January, 1891	47,849,011
Total for 7 months ending January 31, 1892	426,839,782
Total for 7 months ending January 31, 1891	459,212,687

Correspondence.

** We do not hold ourselves responsible for the opinions expressed by our correspondents.*

ROBURITE AND ITS FUMES.

To the Editor of the Chemical Trade Journal.

SIR,—With reference to the article on this subject in your issue of e 5th inst., I should be obliged if you would allow me space for a few ditional remarks.

No doubt most of your readers are aware that in any district where e Miners' Permanent Relief Society is in operation, where any worker coal mines loses his life by an accident, his widow is entitled to re- f from the fund. It is quite conceivable, therefore, that a coroner's ry might consider they were doing their duty, and a kindness at the same time by connecting any doubtful case of a collier's death with his work in the mine, so that the widow might receive relief from the society.

The coroner in summing up drew the attention of the jury to part of the evidence given by Dr. Paul, in these words :—"You must not forget this, that he does give you a positive opinion that so far as observation of this poison goes, and so far as general reading goes, and general experience goes, there is not any case of such gases as these having the effect of inflaming the meningitis, and therefore, you must attach due weight to that." Dr. Paul is described by the coroner, as "one of the greatest authorities in this country, upon the effects of various poisons, certainly a very great observer, and one whose opinion can be relied upon."

I may here remark, that the inquest was adjourned in order that portions of the deceased's body should be subjected to analysis, and expert evidence given. Dr. Paul was appointed by the coroner, I believe, to make the analysis and to give expert evidence, and yet the jury in the face of his evidence, find that death was due to a cause, which, in Dr. Paul's positive opinion, is unknown. It is also important to note that Dr. Paul states that analysis of the lungs, liver, kidneys, and stomach, made with the object of detecting any nitrous compounds which might have been liberated by the explosion of Roburite, failed to give any positive results; and that spectroscopic examination of the blood for carbon-monoxide gave negative results.

At the inquest, the representatives of my company tendered scientific evidence to rebut the theory that death was in any way due to the fumes from the shot. The coroner, no doubt, was fully within his rights in refusing a hearing, nevertheless, had such evidence been admissable, we were prepared to prove, from the investigations carried out by two separate committees, that under the conditions of working it was absolutely impossible that the fumes from the shot could have had anything to do with the death of Sandiland.

The most recent of these committees issued a report, entitled, "An investigation as to whether the fumes produced from the use of roburite and tonite in coal mines, are injurious to health." The committee was appointed by the Durham Coalowners' Association and the Durham Miners' Association, each body being equally represented. On the 6th April, 1891, it was unanimously resolved that the reports of the experts appointed to carry out the scientfic investigations, be received and adopted, and that they be printed and circulated. These reports, which are well worth study, have been recently issued as an excerpt from the Transactions of the Federated Institution of Mining Engineers.

On pages 17 and 18 of above excerpt, Professor P. P. Bedson details the results he obtained from an experiment, made specially with a view to ascertain the rate of removal of the fumes from a shot by ventilation. As a result, he found that after 2,256 cubic feet of air had passed through the place, the fumes were entirely removed. Now in the case at Atherton, the deceased did not go into the place for from five to eight minutes after the shot was fired, the air current being 4,000 cubic feet per minute. Taking the lowest estimate, we see that nearly ten times as much air as was found to be sufficient by Dr. Bedson, to remove the fumes, passed through the place before the deceased went to work again after the shot.

I must not trespass on your space by calling attention to other points, although there are several important ones. I, however, give you below the joint statement of "conclusions and recommendations" made by the experts, appointed by the above-named committee :—

1.—That the products of the explosion of roburite and tonite, are not more deleterious than the products of the explosion of gunpowder.

2.—That with regard to the effects of the explosion of roburite, no chemical evidence was obtained of the presence of nitro-benzine, and throughout the enquiry no case of nitro-benzine poisoning was met with.

3.—That with regard to the production from roburite, tonite, and gunpowder of carbon-monoxide, the quantity found in average samples of air collected in the place is small, and is so quickly dissipated by the air current, as to have been detected only in traces at an interval of five minutes after the firing of the shot.

4.—Upon the foregoing statement with regard to the rapid and progressive dissipation of the fumes by the air current, we base a strong recommendation that an interval of at least five minutes be allowed to elapse after the firing of the shot before the hewers re-enter the place.

5.—That as part of the gases detected in the fumes are produced by the burning of the fuse, we recommend that the cartridges be fired by electricity.

In conclusion, I may say that my company have always courted the fullest scientific enquiry into the composition and effects of the gases resulting from the detonation of roburite, and I think we may fairly claim that the finding of two perfectly impartial committees, composed of scientific experts, should be accepted as carrying more weight than any other non-scientific enquiry.

Yours, &c.,

H. A. KROHN,

Sec. Roburite Explosives Co., Ltd.

THE PRODUCTION OF BAUXITE.

To the Editor of the Chemical Trade Journal.

Sir,—In reference to a paper read at the Glasgow section of the Society of Chemical Industry, it might appear therefrom that the company referred to are the only miners of this article in county Antrim. May I be permitted to state that the Irish Hill mines, if not the oldest, are certainly the largest producers of bauxite, as may be gathered from the export returns to America and the Continent, in which countries, as well as in this, it is renowned for its superior quality.

These mines comprise some 3,000 acres, and have been worked for a long number of years by the well known Bauxite Company, Limited, for whom I am sole agent.

Yours truly,

Geo. G. Blackwell.

SALFORD GAS.

The illuminating power is expressed in standard candles; the ammonia and total sulphur in grains per 100 cubic feet. The carbonic acid is calculated to volumes per cent. The determinations have all been made on the gas supply to the Manchester Technical Laboratory, 32, Blackfriars-street.

Date. 1892.	Illuminating power.	Ammonia.	Total sulphur.	Carbonic acid.
Mar. 10	15·4	Nil.	17·19	0·62
,, 11	15·1	0·03	16·61	0·75
,, 12	15·5	0·07	23·56	0·79
,, 14	14·2	0·04	13·22	0·58
,, 15	15·7	0·04	15·37	0·39
,, 16	16 1	0·01	17·17	0·46

Trade Notes.

Magnolia Anti-Friction Metal.—It may be of interest to our readers to learn that a firm having advertised that they were in a position to sell this metal at a cheaper rate than that mentioned in the Company's price list, an injunction has been obtained to restrain the persons in question from so doing. The genuine magnolia metal can only be obtained through the London and Manchester offices, or the company's accredited agents.

Personal.—Pro. Flueckiger, long connected with the University of Strassburg, has resigned his position as ordinary Professor of Pharmaceutal Chemistry and Pharmacognosy, his resignation to take effect at the close of the present semester, in March. He was led to make this change on account of his great age and because of his appointment as extraordinary professor (honorary) in the University of Berne (Switzerland), his native city. His successor has not been selected as yet.

Serious Fire at an Oil Works.—At the Eccles Oil and Tallow Works, Whitebirk, Blackburn, a big fire occurred last week. Three hundred tons of tallow and oil were stored on the premises, and notwithstanding the efforts of the fire brigade the fire had to burn itself out. The heat was terrific, and as tank after tank took fire and burst the firemen had to run for their lives. The sky was illuminated for miles around. The works were entirely destroyed, the damage being estimated at £8,000. About an hour after the commencement of the fire some oil which had escaped from one of the tanks ran down the Burnley road in a large stream. Fortunately, however, it did not catch fire.

The Massachusetts Institute of Technology.—According to the annual catalogue of the Massachusetts Institute of Technology, recently issued, the full number of students is 1,011. Of this number, 706 are regular students taking the prescribed course; the rest are special students, who lay out their courses for themselves. Of the regular students outside the freshman class, 108 students devote themselves to electrical engineering, 104 to mechanical engineering, 81 to civil engineering, 33 to architecture, *28 to chemical engineering*, 23 to chemistry, 19 to general course, 17 to mining engineering, 11 to biology, 9 to sanitary engineering, 5 to physics, and 3 to geology.

London Water Supply.—In the water supplied to the Metropolis during the month of January, the mean amount of organic carbon was found by Professor William Crookes, Dr. William Odling, and Dr. C. Meymott Tidy, to be ·158 part in 100,000 parts, as against ·240 part in the previous month's supply. Moreover, the maximum amount of organic carbon in any single sample examined was found to be reduced from ·319 part in December to ·204 in January, the next highest amount recorded during the month being only ·189 part in 100,000 parts of the water.

Another Fire Extinguisher.—This new agent for fire extinction is a fluid which is designated "Vulite," is prepared by Mr. Max Eberhardt, of Lucerne. It is claimed for it that it has an extinguishing power nine times stronger than that of water; that it contains no free acid, is harmless, and exercises no injurious action upon fire engines and hose, or upon the articles upon which it is thrown, and, amongst other properties, that materials once extinguished by it cannot be ignited again. The extinguisher has been tried upon burning petroleum, tar, resin, and wood, and the results have been pronounced to be most satisfactory.

The Salt Trade.—From the official records just issued it appears that the past month has shown no revival in the salt trade. Middlesbrough has shipped more salt to the East Indies and has been fairly busy at the expense of Liverpool. America shows diminishing shipments on the whole, though the Northern States have taken more than in February, 1891. The decrease is in the Southern States, and amounts to 3,063 tons, as compared with an increase of 1,331 tons. The continued small shipments to the East Indies tell heavily on the month's returns, there being a reduction of no less than 3,722 tons on the small shipments of 14,958 tons in the corresponding period of last year. The average for the past ten years is 52,543 tons—for the first five years 56,753 tons, and for the last five years 48,332.

The Verdin Trust Fund.—The Charity Commissioners are promulgating a scheme for the administration of the Verdin Trust Fund of £27,000., which was given by Mr. J. Verdin about two years ago for the purpose of compensating owners of property for damage done by subsidence in the salt districts of Cheshire. The Brine Pumping (Compensation for Subsidence) Act having been passed last year, the necessity for this fund no longer exists, and the trustees have therefore applied to the Charity Commissioners to frame a scheme whereby the money may be applied to the erection of technical schools at Northwich and Winsford, and to other purposes for the benefit of the district. At the annual meeting of the governors of the Victoria Infirmary, Northwich, held yesterday, Mr. Joseph Verdin announced that under the scheme provision was made for the endowment of that institution to the extent of £6,000.

Mercury in the Caucasus.—In addition to the quicksilver mines in operation near Bakhmont, in European Russia, which produce at the present time 20,000 pounds of mercury annually, deposits of mercury are said to have been discovered in the province of Daghestan, in Caucasia, and the mining administration has every reason to believe that private enterprises will be established, which will make undertakings of this kind very profitable. The Ministry of Domains has decided to tax Russian mercury, as is done with all other Russian metals. It is proposed to establish taxes of 50 copecks (equivalent to 1s. 7d.) per pood of pure mercury, and of 45 copecks per pood of cinnabar made from Russian mercury (a pood = 240 lb.).

Grocers and Adulteration.—Recently a deputation representing Manchester, Liverpool, Birmingham, Bristol, Newport, and Wolverhampton, at the instance of the Federation of Grocers' Associations, waited upon Mr. Ritchie with a view to obtaining an amendment of the various acts directed against adulteration. The chief points urged were in relation of the sales of margarine and coffee. In reference to the latter, it was asked that there should be a definition of the proportions in which coffee and chicory might be legally mixed. Mr. Ritchie stated that the Government could not deal with the detailed grievances of the deputation, but if a bill was introduced to deal with the matter, he would be pleased to give it his careful consideration and render any services he could.

Manchester Technical School.—At the last monthly meeting of the Council of the Technical School, Councillor Harry Rawson in the chair, the best thanks of the Council were given to Messrs. Brunner, Mond, and Co., and Messrs. Ivan Levinstein and Co. for gifts of chemicals; to Messrs. J. and R. Shorrock, of Darwen, for a patent split motion; to Messrs. George Thomas and Co. for a patent yarn tester. The offer of Messrs. Dobson and Barlow, of Bolton, to supply the spinning and weaving branch with a carding engine of an improved type to replace their simplex carding engine, and that of Messrs. Horsfall and Bickham to clothe the same, were gratefully accepted. Courses of lectures and demonstrations had been arranged in wire jointing for telephonic, telegraphic, and electric light cables, and on the various photo-mechanical process methods for letterpress and lithographic printing. A summer course in photography of a practical character has also been arranged. On the 31st of this month, the school passes into the hands of the Manchester Corporation, and on Friday, last week, a presentation was made to Mr. Rawson who for upwards of fifty years, has been connected with the welfare of the Technical School, and is the Chairman of the School Committee.

Obituary.—We regret to announce the death of Theophilus Redwood, Ph.D., F.I.C., on the 5th inst. He was born March 2nd, 1806, at Boverton, Glamorganshire. He studied under Faraday at the Royal Institution, and under Professsor Graham, at the University College. He was appointed Secretary of the Chemical Society in 1852, in conjuntion with the late Sir B. Brodie, and was appointed

er in 1865, which post he held till 1870. He succeded Professor s, as Professor of Chemistry to the Pharmaceutical Society in Dr. Redwood was an intimate friend of Thomas Carlyle

TIDY, the eminent Government analyst, died last Tuesday night. dy's career reflects honour on himself, as the position he attained s not due to an accident of education or birth. On water and y questions, his opinion carried great weight.

Our Book Shelf.

TIONARY OF THE COAL TAR COLOURS. Compiled by G. H. urst, F.C.S.; 106 p.p. London:—Heywood and Co., 10s. 6d.

great increase in the number of coal tar colours which have been ered during the past decade, has caused a marked want for a work nature.

the exception of the work of Benedikt and Knecht, there is no ttempt in the English language, at a systematic classification of ious colouring matters now in existence.

work in question is complete, and as far as is possible well up to It is nicely got up and the formulæ and text are neatly printed. introduction the grouping of the coal tar colours into their ive 16 groups is explained, and the distinctive features of each iefly reviewed.

arrangement of the colours is of course alphabetical, but their treatment is a noteworthy point in this book. Following the f the colour, is that of the maker, thereby giving a clue as to uch a colour, if required, can be obtained. Following this is se account giving the chemical name, formula, and preparation colour, which comprises in several instances an interesting re- the history of the colour. At the end of this description comes e of its introduction with the name of the discoverer, when it is to give the same. At the end of each colour, references are o other literature bearing on the subject. In a great number of he methods employed for dyeing cotton, wool, and silk with the nportant colours are described. Under M there is an account of thods of dyeing with the Coal Tar Colours generally, which rably adds to the all round utility of the work. In summarising eral traits of the book, we consider it a most useful addition to ature of this special branch of chemistry, and we should strongly end it to the attention of dyers and printers and all those en- n the colour industry, as a work which they should not fail to

Market Reports.

TAR AND AMMONIA PRODUCTS.

ol remains as flat as ever and while 90's stands nominally at 50's are certainly not more than 1s. 6d. The pitch market is n and the recent action of the colliers will no doubt have a effect in keeping up prices. The anthracene market remains h the same state as quoted last week. All anthracene is difficult though there is no further depreciation in value, 30% A is value while 30% B ranges from 8½d. to 9d.

sulphate of ammonia market remains in exactly the same state as last week, and spot parcels can as a rule be moved off only by ng lower prices, still there is a latent steadiness which has so vented prices going down further, and the figures remain at s. Hull and Leith, and £10. 2s. 6d. Liverpool. The Gas Light ke Co. quotations having been reduced to £10. for March and elivery, have rather an unfavourable effect on the country s, but London outside makes may still be quoted at 3s. 9d. to ance on this figure.

IVERPOOL OIL AND COLOUR MARKET.

LIVERPOOL, WEDNESDAY.

S.—Palm oil continues in fair demand. The market is steady, being quoted £21. 15s. spot and £21. 10s. to arrive, both transit. as a tendency to weaken, the business passing is very small anging from £33. 10s. to £38. per tun. Linseed is unaltered. were sales at 20s. during the end of last week, to-day prices ed 19s. 6d. to 20s. 6d. per cwt. in export casks, the demand air. Cotton Seed; Liverpool refined was quoted 19s. 6d. early week, it has, however, declined again to 19s. 3d., American r cwt., at which the market is steady. Castor oil has hardened at and is now steady with good seconds Calcutta at 2¾d. and first pressure French at 2⅞d. per lb., at which figures considerable sales have been effected. Tallow was very flat during the latter part of last week, to-day it is steady, though quiet, at last week's figures. Resin common continues at 4s. 4½d. Though it has varied somewhat during the week it is now steady with a fair demand for all qualities. Spirits of Turpentine has been as low as 27s. during the week. An improvement has set in, however, and it is now steady at 27s. 6d. per cwt. Petroleum quiet, American 5¼ to 6½ according to quality; Russian refined 4⅜ to 4½ per gallon.

COLOURS unaltered. Ochres: Oxfordshire, common, £10., medium, £12., best, £15.; Derbyshire, common, 40s., medium, 50s., best, 60s. Welsh, best, 70s., seconds, 50s., and common, 18s.; Irish, Devonshire, 40s. to 45s.; French, J.C., 55s. to 60s.; M.C., 65s. to 67s. 6d. Umber: Turkish quiet. Devonshire, 50s. to 55s. White lead, red lead, and oxide of zinc unchanged. Venetian red, £6. 10s. to £10. Cobalt: Prepared oxide, 10s. 6d.; black, 9s. 9d.; blue, 6s. 6d. Zaffres: No. 1, 3s. 6d.; No. 2, 2s. 6d. Oxide of iron: common, £6.; medium, £10.; finest, £20.

REPORT ON MANURE MATERIAL.

Agricultural operations being still delayed by unfavourable weather, the market continues to drag, and the business of the week has been on a small scale for the time of year, without much change in prices.

High grade Florida Rock, 75/80% cannot be quoted over 8½d. per unit, at which price it is reported that business has been done. For hot-air dried Peace River Rock 60%, 7½d. nearest value, and although more money is asked for hot-air dried Charleston River Rock 55/60%, buyers will be slow to pay the higher price so long as Peace River is available. In Continental descriptions we have nothing fresh to note. The higher grades are relatively dear and retained mostly for Continetal use, whilst the lower grades offer freely at accommodating prices.

There is no animation in the market for bones and bone meal, River Plate cargoes afloat, are worth barely £4. 2s. 6d., but for shipment £4. 5s. or something more would have to be paid. Sales of fair average quality crushed Kurrachee bones have been made for shipment at £4. 5s., but for anything near at hand or on spot, £4. 7s. 6d. would have to be paid; £4. 2s. 6d. is about the value of crushed Bombays. Bombay bone meal is coming forward in such varying quality that a wide margin in quotations is required. Fine quality, free from adulteration, is worth £4. 10s. ex quay, but some of the recent arrivals would be dear at £4. 2s. 6d., and buyers will need to careful what they buy. Common grinding bones are selling at £3. 17s. 6d. to £4. 2s. 6d., according to quality and condition.

Nitrate of soda is very quiet, spot at 9s. 3d. to 9s. 4½d., according to quality. Due cargoes are worth about 9s. 3d., and January shipments scarcely so much.

Dried blood quiet at 9s. for River Plate, and 9s. 6d. for home prepared. Kainit finds a ready sale at 45s., nett cash, in bags, ex quay, and superphosphates are unchanged.

MISCELLANEOUS CHEMICAL MARKET.

Owing to continued activity in demand consequent upon the probable stoppage of production, prices of alkali have become firmer generally, and in caustic soda an all-round advance has been made of 5s. per ton. Prices now, therefore, stand for 10 ton lots and upwards, f.o.b. Tyne, 77%, £11. 10s.; f.o.b. Liverpool, 74%, £11. 10s.; 70%, £10. 10s.; 60%, £9. 7s. 6d.; cream, 60%, £9. 2s. 6d. In soda ash there is no alteration in price, but Leblanc ash in all qualities is in good demand. Soda crystals remain steady at former rates. Bicarbonate of soda, £6. 12s. 6d. per ton, f.o.b. Chlorate of potash 7d. per lb.; chlorate of soda, 7½d. per lb. Bleaching powder is also in brisk demand, but price remains at £7. 10s. nett f.o.r. makers' works. Recovered sulphur still in short supply, with a firm market. Vitriol and muriatic acids continue in good demand. Saltcake, 37s. 6d. to 40s. per ton. For potash, caustic, and carbonate there is rather a light demand, but prices are without change. Sulphate of copper remains dull, and price unaltered at £14. 10s. per ton at usual points. White powdered arsenic has been sold at slightly easier prices, and rules from £10. 15s. to £11. per ton. Acetates of lime, brown and grey, are without special demand, and prices are £6. 5s. and £10. per ton respectively, at the chief centres of consumption. Acetate of lead dull, but price nominally without change. Nitrate of lead also quiet, and prices ruling from £20. to £20. 10s. per ton. Alum and sulphate of alumina are in fair demand and without change in value. Oxalic acid quiet at 3d. per lb. Sulphocyanides are still offered freely at low prices. Yellow prussiate of potash continues firm at 10¾d. Bichromates without any quotable change. Tin crystals 6⅞d. per lb. General demand for chemicals in the textile trade still reported unsatisfactory from all quarters.

THE METAL MARKETS.

LONDON, Wednesday.—Pig iron dull; Scotch warrants closed at 40s. 10d. cash. Middlesbrough 36s. 5d. cash, and Hematite 46s. 1d. cash. Copper, steady. Chili bars, G.O.B.'s and G.M.B.'s closed at £46 7s. 6d. to £46. 10s. cash, and £46. 18s. 9d. to £47. three months. Tin quiet: Straits closed at £89. 5s. to £89. 12s. 6d. cash, and £89. 10s. to £90. three months. Australian, £89. 10s. cash; English ingot, £92. 10s. to £93. Lead firm: Spanish, £10. 17s. 6d. to £11.; English, £11. 2s 6d. to £11. 5s.; Silesian spelter, ordinary, £21. Quicksilver: First and second hands, £7. 2s. 6d. Copper shares firm: Cape 1⅝ to 1¾; Copiapo 2$\frac{13}{16}$ to 2$\frac{15}{16}$; Libiola 3¼ to 3½; Mason and Barry 4¾ to 4⅞; Rio Tinto 17⅞ to 18; Tharsis 5$\frac{11}{16}$ to 5$\frac{13}{16}$; Namaqua 1¼ to 1⅜; Panulcillo ⅝ to ¾.

GLASGOW, Wednesday.—Market steady, with moderate business. No Scotch done; closing with buyers at 40s. 9d. cash, sellers ask 40s. 10½d. Middlesbrough done at 36s. 7d. and 36s. 7½d., one month; closing with buyers at 36s. 5d. cash, and 36s. 7d. one month, sellers ask 1d. more. Hematite done at 46s. 1½d. and 46s. 2½d. cash, also at 46s. 3d., 46s. 3½d., and 46s. 3d. one month; closing with buyers at 46s. 1d. cash and 46s. 3d. one month, sellers ask ½d. more.

WOLVERHAMPTON, Wednesday.—Numbers of ironworks remain closed owing to short supplies of coal, and in the present state of trade ironmasters are in no hurry to restart them. Demand to-day very quiet for all classes of iron. Sheet iron especially depressed. Prices weak all round. Common bars, £5. 12s. 6d. to £6.; merchant bars, £6. 10s. Sheets: Doubles changed hands occasionally at as low as £7. and singles at £6. 15s. Pigs tame: Derbyshires, 43s. 6d. upwards, Lincolns, 47s. 6d., Staffordshire common 37s. 6d, best 62s. 6d.

THE LIVERPOOL MINERAL MARKET.

The firmness reported in our market last week has been well maintained. Manganese: Arrivals have somewhat improved, but they have gone straight into consumption. Stocks have been further drawn upon, and prices have continued firm, with the prospect of an advance. Borate, 6¼d. per lb.; sulphate, £21. 10s.; oxalate, 1s. 6d. per lb.; chloride, £15.; carbonate, £12. 10s., steady. Magnesite: Although there is little more inquiry for raw lump it continues flat. Raw ground £6. 10s, and calcined, £12. 10s. Bauxite (Irish Hill brand) remains firm at full figures—lump, 20s.; seconds, 16s; and thirds, 12s. French chalk: Arrivals somewhat smaller this week; prices firm. "Angel White" brand; silvery, 90s. to 92s. 6d.; prime quality, 90s. to 95s.; and superfine, 105s. Barytes:—Carbonate scarce; for all qualities, 90s. to 95s.; nuts, 70s. to 80s.; whilst finest white sulphate is steady. "Angel White," No. 1, 70s.; No. 2, 60s. to 65s.; No. 3, 45s. Pumicestone steady. Iron ore: Owing to the strike Bilbao is scarce; Irish and Cumberland easy. Santander and manganiferous, there is more doing. Emerystone: High class quality in good demand, bringing full prices—No. 1 lump, £5. 10s. to £6.; smalls, £5. to £5. 10s. Fullers' earth quiet; best lump, 55s.; fine impalpable ground, £7.; "Emerald" ground, 80s. Scheelite, wolfram, tungstate of soda, and tungsten metal strong, with advance in price. Chrome ore of high percentages scarce, both for spot and forward delivery bringing full figures. Antimony ore and metal considerably easier. Asbestos firm. Potters' lead ore of best quality quiet; smalls, £12. 10s. to £13. 15s.; selected lump, £14. 10s. to £15. 10s. Calamine easy. Strontia sulphate (celestine) quiet. Limespar unchanged, especially for English manufactured; old G.G.B. brand in demand at 50s. (ground). Felspar unchanged. Fluorspar: Best quality scarce. Ferro manganese firmer, 75%, £12.; 85%, £13. 15s. Plumbago brisk. Spanish, £5.; best Ceylon lump at last quotations; Italian and Bohemian, £4. to £12. per ton. "Founders," £5. to £6.; Blackwell's "Mineraline," £10. French sand, 20s. to 22s. 6d. Ground mica, £45 to £50. China clay steady; common, 18s. 6d.; good medium, 22s. 6d. to 25s.; best, 30s. to 35s. (at Runcorn). Bog ore (oxide of iron) steady; finest quality, 22s. to 23s.

TYNE CHEMICAL REPORT.

Tuesday.

Chemicals are in active demand, owing principally, no doubt, to the Durham miners strike, consumers being apparently anxious to lay in stocks lest a total stoppage to all the Tyne works should ensue; there is also more enquiry from over sea, Russia, etc., and large transactions have recently taken place. Should the strike continue for any length of time, the closing of all the Tyne works is to be feared; we hear that two of the works close to-morrow. Prices are:—Bleaching powder, softs, £7. 10s. per ton, hards, £7. 15s. per ton; caust 77%, £11. 10s. per ton, 70%, £10. 5s. per ton; recovered 2 cwt. bags, £5. 15s. per ton; soda ash, 48%, £5. 8s. 9d. p 52%, £5. 17s. 9d. per ton, 56%, £6. 6s. 9d. per ton; alkal £4. 18s. 6d. per ton; white alkali, 48%, £6. 10s. per to £6. 15s. 6d. per ton, 52%, £7. per ton; hyposulphite of soda, ton in 5-7 cwt. casks, £7. 15s. per ton in 1 cwt. kegs, both i lots; silicate of soda, 75° Tw. £3. per ton, 100° Tw. £4. per t Tw. £4. 7s. 6d. per ton; soda crystals, in casks, £2. 17s. 6d. gross weight, in 2 cwt. bags, £2. 17s. 6d. per ton nett weight; of potash, 6½d. per lb. less 6%; pearl hardening, £3. 10s. p pure white sulphate of alumina, £4. 10s. per ton; blanc fixe, per ton; chloride of barium, £7. 10s. per ton; nitrate of crystals, £17. per ton; nitrate of baryta, ground, £17. 10s. p sulphide of barium, £7. per ton; carbonate of alumina, £28. ton; aluminate of soda, £33. 10s. per ton; hydrate of barium per ton.

Salt quiet, at 9s. per ton nett f.o.b. Tees.

In the coal trade the position is that the Durham pits g have ceased to produce, and the opinion of those well informe these matters being that the strike is likely to last 8 to 12 weeks; this happen the result will be to close the majority of the indus Tyne, throwing some thousands of men out of employment.

It is almost impossible to give any prices. Northumberla is much dearer this, than last week. Contracts cover much of put and dealings are limited to special bargains, and rates vary ing to position of colliery. Best Northumbrian steam, may be at 13s. to 13s. 6d., f.o.b.; unscreened, say 10s.; smalls, 7s. to

WEST OF SCOTLAND CHEMICALS.

GLASGOW, Tues

There is certainly more activity on the part of buyers here, an have gone in somewhat more numerously, but only for promp least quite early delivery. Stoppage of colliery output in Eng manifestly the principal, if not the only cause. Fuel prices affected here (although the Scotch miners have not stopped) bu in England. Bleaching powder is still comparatively strong, further slight advance in holders' quotations, and the spring booked are reported as satisfactory. With the exception of th tional rise, there is no other price fluctuation in this market, the in chlorate of potash being maintained.

Shipments of sulphate of ammonia out of Leith, last week, ran tons, all *ex* port contracts. The demand for the Continent is time extinct, and over there re-sellers are plentiful.

In the mineral oil section (paraffins) there is no change of fair amount of stuff is going out of makers' hands, but at prices all rosy. Higher gravities of lubricating oils are fairly steady, l is feeble, and must, to-day, be quoted lower, as below.

Chief prices current are:—Soda crystals, £2. 17s. 6d., nett alum in lump, £5. 10s., nett Glasgow; soda ash, 1⅜d., les Tyne; caustic soda, white, 74°, £11. 5s., 70/72°, £10. 5s., £9. 2s. 6d., and cream 60/62°, £8. 17s. 6d., all nett Liverpool bonate of soda, 5 cwt. casks, £6. 15s., and 1 cwt. casks, £7. net refined alkali, 1⅝d., less 2½% Tyne; bleaching powder, £7. nett Tyne; saltcake, 37s. 6d.; borax, English refined, £ boracic acid, £37. 10s., nett Glasgow; bichromate of 3¾d., less 10% for Scotch and English deliveries (for 3½d., less 10% f.o.b. Glasgow); bichromate of soda, less 10% for Scotch and English deliveries (for export less 10% f.o.b. Glasgow); chlorate of potash, 6¾d., less 5 port; nitrate of soda, 9s. 4½d.; sulphate of ammonia, £ f.o.b. Leith; salammoniac, first and second white, £35. and £ 5% any port; sulphate of copper, £14. 15s. less 5% Liverpool; scale (hard), 2$\frac{15}{16}$d., and soft 2$\frac{1}{16}$d. to 3d. per lb.; paraffin wax semi-refined, 3⅝d. to 4d.; paraffin spirit (naphtha), 7d. a paraffin oil (burning) 5d., 5¼d. and 5½d. according to k works, for Scotch buyers (English sales about 1d. lower) (lubricating), 865°, £3. 15s. to £4., 885°, £5. 5s. to £ 890/895°, £6. to £8. Week's imports of raw sugar at Greeno 18,724 bags.

New Companies.

D. W. Bardill and Co., Limited.—This company was registered on inst., with a capital of £8,000., in £5. shares, to acquire and carry on the of chemist, druggist, and mineral water manufacturer carried on by Mr. Bardill, at Derby and Burton-on-Trent, and with a view thereto to adopt ment dated February 28th, 1892, between Mr. D. W. Bardill, of the one Mr. A. Baum (for the company) of the other part. The subscribers are:—

	Shares.
D. W. Bardill, Charnwood-street,, Derby, chemist	1
W. Randall, 207, Normanton-road, Derby	1
E. Locker, Dunkirk House, Derby	1
C. T. Weston, 166, Burton-road, Derby, chemist	1
S. Bennett, jun., Leopold-street, Derby, grocer	1
H. Dutton, 43, Leopold-street, Derby, merchant	1
H. J. Gange, 171, High-street, Burton-on-Trent, chemist	1

London Soda Works and Trading Co., Limited.—This company was registered on the 4th inst., with a capital of £10,000., in £5. shares, to enter into the agreement referred to in clause 1 of the articles (with Mr. M. C. Hebert), and to carry on the business of soda manufacturers. The subscribers are :—

	Shares.
M. C. Hebert, Horseferry-road, Limehouse, E., soda maker	1
Mrs. M. K. Hebert, 25, Belsize Park, N.W.	1
E. Sallentin, London Soda Works, Horseferry-road, E.	1
A. F. Goodchild, Gresham House, E.C., solicitor	1
C. Young, 49, Stoke Newington-road, N., solicitor	1
D. H. Money, 24, Wilson-road, Camberwell, S.E.	1
J. C. Fleming, 2, Beckford-villas, Leyton, clerk	1

Phillips Gold Recovery Co., Limited.—This company was registered on the 5th inst., with a capital of £150,000, in £1. shares, to adopt an agreement dated January 30th, 1892, between Mr. E. Owen of the one part, and Mr. R. Stewart (for the company) of the other part, and to acquire, manufacture, and let out a lease, machinery and plant suitable for crushing and extracting precious metals from quartz and other minerals and amalgamating gold, and to erect and set up the same in the U.S.A., South Africa, Australia, New Zealand, and elsewhere. The subscribers are :—

	Shares.
R. Stewart, 35, Queen Victoria-street, E.C.	1
S. Edwards, 17, Upper Belgrave-street, Portman-square	1
A. J. Cunningham, Hotel Windsor, Victoria-street, S.W.	1
E. B. Parnell, Sutton, Surrey, metallurgist	1
Lieu.-Col. Lean, 4, Colville-terrace, Kensington Park, W.	1
J. Upward, 16, St. Helen's-place, E.C.	1
G. de Wintra, South Norwood, S.E.	1

St. Julian's Brick and Tile Co., Limited.—This company was registered on the 5th inst. with a capital of £15,000., in £10. shares, to adopt an agreement dated January 16th, 1892, between Messrs. C. D. Phillips and T. Parry, of the one part, and W. Hunter (for the company), of the other part, and to carry on the business of builders, contractors, decorators, brick and tile manufacturers, etc. The subscribers are :—

	Shares.
C. H. Firbank, Old St. Julian's. Caerleon-road, Newport	1
A. P. Williams, Dock-street, Newport, Mon., solicitor	1
T. Parry, Caerleon, auctioneer	1
R. Laybourne, The Firs, Malpas, Newport, Mon., engineer	1
C. D. Phillips, Gair Fach, Newport, engineer	1
J. T. Morris, 51, Hereford-street, Maindee, Newport, builder	1
W. Hunter, 57, Dock-street, Newport, accountant	1

Thomas Owen and Co., Limited.—This company was registered on the 4th inst., with a capital of £200,000. in £10. shares (of which 10,000 are preference), to purchase, or otherwise acquire, carry on and work the paper mills and works known as The Ely Paper Mills, situate at Ely, near Cardiff, South Wales, and with a view thereto to enter into an arrangement with Mr. Thomas Owen. The subscribers are :—

	Shares.
T. Owen, Henley-grove, Westbury-on-Trym, Bristol	1
P. Morel, Lavernock, near Cardiff, shipowner	1
C. T. Owen, Henley-grove, Westbury-on-Trym, Bristol	1
R. W. Perks, 9, Clement's-lane, E.C., solicitor	1
G. A. Denny, 7, Connaught-place	1
J. Cory, Vaindre Hall, near Cardiff	1
C. J. Smart, 296, Cowbridge-road, Cardiff, papermaker	1

The Patent List.

This list is compiled from Official sources in the Manchester Technical Laboratory, under the immediate supervision of George E. Davis and Alfred R. Davis, who report professionally upon the value of Chemical Patents.

APPLICATIONS FOR LETTERS PATENT.

Improvements in Hydro-Carbon Engines. H. A. Stewart and C. R. Binney. 3,909. February 29.

Obtaining Cyanides from Spent Lime and Gas Liquors, etc. J. Addie and J. Cunninghame. 3,981. March 1.

Improvements in the Manufacture of Fuel Gas. A. J. Boult. 3,995. Mar. 1.

Refrigerating Machinery. R. J. Cracknall. 4,035. March 1.

Manufacture of Gas from Mineral Oils. J. Shimwell McDougall and J. T McDougall. 4,041. March 1.

Electric Deposition of Aluminium on Metals R. Goodwin. 4,103. Mar. 2.

Treatment of Raw Material for the Production of Portland Cement. J. T Knowles. 4,131. March 2.

Improvements in Crushers and Pulverisers. W. C. Morison. 4,132. Mar. 2.

Explosives. A. V. Newton. 4,146. March 2.

Improvements in Slurry Drying Chambers. W. H. Charlesworth. 4,149. March 2.

Improvements in the Preparation of Soap. J. Porteous. 4,174. March 2.

Bottles for Holding Hydro-Fluoric Acid. F. P. Hill, A. J. E. Hill, and W. Freeman. 4,237. March 3.

Enriching Gas by Means of Naphthalene. P. D. Ferrie and H. J. B. Thiroux. 4,241. March 3.

Transforming Unsaturated Oleaginous Fatty Acids into less Fusible Saturated Fatty Acids. R. Zurrer. 4,250. March 3.

Smoke Consuming Apparatus. E. Makin, jun. 4,268. March 4.

Electric Motors. A. E. Patterson. 4,277. March 4.

Improvements in Bleaching. H. Thies and E. Herzig. 4,278. March 4.

Removing Scale from Boilers. H. R. Keyser. 4,322. March 4.

Manufacture of the Hydrides of the Alkalies. P. E. Singer. 4,346. Mar. 5.

Improvements in Petroleum or Liquid Fuel Engines. T. Bell and J. Richardson. 4,347. March 5.

Improvements in the Combustion Chambers of Hydro-Carbon Engines. J. Richardson. 4,352. March 5.

Improvements in Gas and Petroleum Engines. F. W. Lanchester. 4,374. March 5.

Improvements in Petroleum and other Hydro-Carbon Engines. J. Richardson. 4,375. March 5.

Smoke Consuming Furnaces. W. M. Greaves. 4,393. March 5.

Manufacture of Paving Blocks from Slag. C. J. Dobbs. 4,408. March 5.

Separation of Oxygen and Nitrogen or other Mechanically Mixed Fluids. J. H. Parkinson. 4,411. March 5th.

Improvements in the Treatment of Explosives. R. W. S. Griffith and G. H. Wadsworth. 4,421. March 5.

Gazette Notices.

PARTNERSHIP DISSOLVED.

E. Wand and W. J. Joyce, under the style of The Paignton Mineral Water Co., Paignton, aërated and mineral water manufacturers.

BANKRUPTCY ACTS, 1883 AND 1890.

Receiving Orders.

Grainger, I. J. P., Ryde, Isle of Wight, oil merchant and ironmonger.

Hellewell Wm. (trading as the Guide Bridge Paint and Colour Co.), Guidge Bridge, near Manchester, Lancs., paint and colour manufacturer.

Tebbs, Richard, Leeds, chemist's agent, formerly chemist.

Adjudications.

Tebbs, Richard, Leeds, chemist's agent, formerly chemist.

IMPORTS OF CHEMICAL PRODUCTS

AT

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending March 3rd.

Acetic Acid—		
Holland,	24 pks.	Elkan & Co.
Acetanilide—		
Holland,	2 pks.	R. Morrison & Co.
Alum—		
Germany,	16 pks.	T. H. Lee
Barytes—		
Germany,	48 cks.	O'Hara & Hoar
,,	19	P. Jantzen
,,	46	W. Harrison & Co.
Belgium,	20	P. Jantzen & Co.
,,	21	J. L. Lyon & Co.
Borax—		
Italy,	14 pks.	Burton, Baker & Co.
Borate of Manganese—		
Germany,	10 pks.	Petri Bros.
Brimstone—		
Italy,	150 t.	W. C. Bacon & Co.
,	400	Brandram Bros. & Co.
,	50	Johnson & Hooper
,	3	R. Morrison & Co.
Bromide of Iron—		
Germany,	22 pks.	A. & M. Zimmermann
Caoutchouc—		
France,	40 c.	Flageollet & Co.
Inhambane,	57	L. & I. D. Jt. Co.
,,	22	Clarke & Smith
Madagascar,	5	Hoare, Wilson & Co.
,,	32	A. Frey & Co. Ltd.
Mauritius,	63	L. & I. D. Jt. Co.
Zanzibar,	8	Hall and Son
Madagascar,	10	Prop. Bull Wf.
,,	19	A. Cheney & Co.
Germany,	110	Prop. Bull Wf.
,	22	Lewis & Peat
Madagascar,	42	Gellatly, Hankey & Co.
France,	4	Prop. Bull Wf.
Caustic Potash—		
France,	100 c.	F. W. Berk & Co., Ltd.
Chemicals *(otherwise undescribed)*		
Germany,	£6	Becker & Ulrich
,,	49 pks. 6	T. H. Lee
,,	15 pks.	Phillipps & Graves
Holland,	3	Phillipps & Graves
Germany,	35	A. & M. Zimmermann
Holland,	27	T. H. Lee
Germany,	11	W. Burton & Sons

Copperas—

Germany,	22 pks.	B. & N. Wf. Co. Ltd.

Copper Pyrites—

Spain,	2,903 t.	C. Tennant, Son & Co.

Cream of Tartar—

Holland,	18 pks.	B. & F. Wf. Co. Ltd.
Italy,	8	E. & E. Arbib
France,	7	B. & F. Wf. Co. Ltd.
,,	4	Smith, Abbott & Co.
Italy,	11	Fellows, Morton & Co.
Spain,	14	W. C. Bacon & Co
,,	6	B. & F. Wf. Co. Ltd.
,,	1	Windschuegl & Co.
Holland,	34	Middleton & Co.

Dyestuffs—

Argols

Italy,	79 pks.	T. S. T. & L. Co., Ltd.
,,	4	Barff & Co.
Cape,	53	W. H. Milsted & Son
,,	39	Brown & Elmslie

Cochineal—

Canary,	2 pks.	Lewis & Peat

Divi divi

E. I.,	240 pks.	R. & J. Henderson

Extracts

France,	159 pks.	L. J. Levinstein & Sons
Denmark,	1	Lavington Bros.
France,	10	Mory & Co.
,,	140	T. H. Lee
U. S.,	100	Skilbeck Bros.
,,	50	Levinstein & Sons

Gambier

Singapore,	225 pks.	J. Swire & Sons
,,	1,702	L. & I. D. Jt. Co.
,,	212	Anderson, Weber & Smith
,,	1,065	Adamson, Gilfillan & Co.

Indigo

E. Indies	58 chts.	F. W Heilgers & Co.
,,	77	Ross & Deering
,,	48	Wallace Bros.
,,	51	Williams, Torrey & Co.
,,	10	Fruhling & Coschen
,,	39	Steinthal & Co.
,,	186	L. & I. D. Jt. Co.
,,	22	Parsons & Keith
,,	21	Stansbury & Co.
,,	21	Patry & Pasteur
,,	4	E. Bower & Co.
,,	161	Ernsthansen & Co.
,,	3	F. Huth & Co.
,,	12	J. Owen
,,	279	Elkan & Co.

Myrabolams

E. Indies,	414 pks.	Baxter & Hoare
,,	333	Ralli Bros.
,,	1,875	L. & I. D. Jt. Co.
,,	1,928	Marshall & French

Saffron

Spain,	1 pk.	B. & N. Wf. Co.

Sumac

Italy,	600 pks.	Sollas & Sons
,,	220	W. Shelcott
,,	14	Harrold Bros.
,,	56	Blundell, Spence & Co.

Tanners' Bark

Belgium,	1 t.	Baxter & Hoare
Cape,	6	Dyster, Nalder & Co.
Belgium,	10	Arnati & Harrison

Turmeric

China,	160 pks.	J. E. Scott
E. Indies,	390	L. & I. D. Jt. Co.
,,	160	J. Swire & Son
,,	114	Wallace Bros.
,,	120	Seton, Laing & Co.
,,	132	Clarke & Smith

Valonia

Greece,	32 t.	J. Graves
A. Turkey	19	,, ,,
,,	43	Anning & Cobb
,,	57	A. & W. Nesbitt
,,	51	Hicks, Nash & Co.

Farina—

Germany,	100 pks.	Humphrey & Co.
Holland,	85	J. Knill & Co.

Glucose—

U. S.,	1,000 pks.	1,000 c.	Beresford & Co.
,,	250	250	L. Norman & Co.
,,	300	300	L. Sutro & Co.
,,	750	750	Baxter & Hoare
,,	100	600	R. G. Hall & Co.
,,	50	264	W. Balchin
,,	50	301	J. Knill & Co.
,,	300	300	Barratt, Tagant & Co.
France,	350	350	J. Barber & Co
,,	300	300	M. H. Voss
,,	400	400	L. Norman & Co.
,,	150	150	Barratt, Tagant & Co.

Manganese—

Germany,	12 t.	H. Johnson & Sons

Manure—

Germany,	50 t.	F. W. Berk & Co.

Methyl Alcohol—

Germany,	10 drs.	Domeier & Co.

Naphtha—

Belgium,	4 drs.	W. G. Blagden
,,	13	Stein Bros.

Ochre—

Holland,	3 css. 10 pks.	Phillipps & Graves
France,	59 cks.	W. Harrison & Co.
,,	6	B. Young
Germany,	1 cs.	Phillipps & Graves

Painters' Colours—

Germany,	9 pks.	Phillipps & Graves
,,	15	Pickford & Co.
Italy,	18	E. & E. Arbib
Belgium,	7	Barr, Moering & Co.
France,	59	Arnati & Harrison
Germany,	3 cks. 14 pks.	L. & I. D. Jt. Co.
,,	3	Pickford & Co.
,,	8 pks. 1 cs.	T. H. Lee
U. S.,	3	Beck & Pollitzer
Germany,	32	T. Hamilton
France,	10	Flageollet & Co.
Hong Kong	2	C. M. Liddle & Co.
Italy,	3 cks.	O'Hara & Hoar
,,	18 pks.	E. & E. Arbib
Belgium,	1	J. Leete & Sons
France,	19	G. J. Thompson
Holland,	1	J. Owen
,,	16	P. Jantzen
France,	8	R. Baelz & Co.

Paraffin Wax—

Germany,	35 pks.		Ross & Deering
U. S.,	46 brls.		Produce Brokers Co.
,,	220	5 cs.	McDougall & Bonthron

Pearl Ashes—

France,	110 c.	Petri Bros.
,,	120	F. W. Berk & Co., Ltd

Phosphate Rock—

Belgium,	200 t.	Lawes Chemical Manure Co.
France,	1,107	A. Hunter & Co.
U. S.,	760	Wyllie & Gordon
France,	220	Anglo Cntl. Guano Wks.

Pitch—

Germany,	20 brls.	Phillipps & Graves
France,	105 cks.	H. Hill & Sons

Plumbago—

Ceylon,	19 brls.	J. Cooper
,,	56	Hoare, Wilson & Co.
Holland,	64 cks. 11 cs.	B. Galloway
Germany,	134 cs.	T. H. Lee

Potashes—

Canada,	98 c.	G. Boor & Co.

Potassium Carbonate—

France,	203 c.	Carey & Sons
,,	100	J. A. Ried

Potassium Prussiate—

Germany,	7 pks.	A. & M. Zimmermann

Quicksilver—

N. Russia,	20 btls.	L. & I. D. Jt. Co.

Salt—

France,	180 t.	D. Bumstead & Co.

Saltpetre—

Germany,	50 cks.	J. Hall & Son
,,	155	P. Hecker & Co.
E. Indies,	562 bgs.	L. & I. L. J. Co.
Germany,	6 cks.	Craven & Co.
,,	200 bgs.	C. Wimble & Co.
E. Indies,	2,476	,, ,,

Sodium Hyposulphite—

Germany,	181 pks.	Beresford & Co.
Holland,	27	Taylor, Sommerville & Co.
,,	227	W. G. Jacobs

Tartaric Acid—

Italy,	40 pks.	W. C. Bacon & Co.
Holland,	1	Middleton & Co.

Ultramarine—

Germany,	2 cks.	Magee, Taylor & Co.
Holland,	4	Spies, Bros. & Co.
Germany,	4	J. Kitchen, Ltd.
,,	20 cs.	G. Steinhoff

White Lead—

Germany,	21 cks.	Randall Bros.
,,	8	J. Kitchen, Ltd.
,,	22	W. Fenton
,,	23	M. Ashby, Ltd.
Holland,	51	T. & W. Farmiloe
,,	8 brls.	Societe Maritime Belge
Germany,	46 cks.	W. Croft

Zinc Oxide—

Holland,	500 cks.	Soundy & Sons
U. S.	100 brls.	M. Ashby, Ltd.
Holland,	175	,, ,,

LIVERPOOL.

Week ending March 10th.

Acetic Acid—

Rotterdam,	20 btls. 35 balloons.

Acetate of Lime—

New York,	417 bgs.

Barytes—

Antwerp,	23 cks.

Bitumen—

Jaffa,	44 cs.

Borate of Lime—

Antofagasta,	260 bgs.

Chloride—

Rangoon,	30 cks.

Copper Pyrites—

Huelva,	1,060 t.	Matheson & Co.
,,	3,349	Tennants & Co.

Dyestuffs *(otherwise undescribed)*

Marseilles,	1 bskt.
Argols	
In transit,	46 cks.
Cutch	
Rangoon,	1,772 bxs.
Divi Divi	
San Francisco,	169 sks.
Indigo	
Calcutta,	576 chts.
Myrabolams	
Bombay,	567 bgs.
Calcutta,	2,000 pockets.
Orchella	
Lisbon,	32 bgs. Edwards
Sumac	
Barcelona,	100 sks.

Guano—

Buenos Ayres,	2,352 bgs.

Horn Piths—

Buenos Ayres,	85,000

Isinglass—

Para,	31 cs.	Bieber & Co.
,,	8	J. Lilly & Son
Maranham,	2 cks.	Schill, Modera & Co.
,,	4	Gunston, Sons & Co.
,,	1 css.	H. Evans & Co.

Manganese Ore—

Gothenburg,	120 t.	Macqueen,

Nitrate—

Pisagua,	6,423 bgs.	H. Bath &

Ochre—

Rouen,	116 cks.	R. J. Francis &
Marseilles,	14 brls.	J. L. Carr
,,	43	Wilson, Sons &
Rouen,	46 cks.	Co-op. W'sale.

Oleine—

Antwerp,	4 cks.	

Phosphate—

Fernandina,	1,492 t.	

Pitch—

Marseilles,	98 brls.	
Batoum,	25	

Potash—

Rouen,	8 cks.	Co-op. W'sale.

Pyrites Sulphate—

Huelva,	2,623 t.	

Rosin—

Savannah,	3,650 brls.	
San Francisco,	58 cks.	

Saltpetre—

Calcutta,	880 bgs.	

Silicate—

Rangoon,	30 cs.	

Soap—

Philadelphia,	5 css.	

Soda—

Rotterdam,	25 cks.	

Sodium Bicarbonate—

Hamburg,	1 ck.	

Sulphur Ore—

Huelva,	1,456 t.	Matheson &

Tartar—

Bordeaux,	8 cks.	

Tartaric Acid—

Rotterdam,	8 cks. 25 kgs.	

Waste Salt—

Hamburg,	500 bgs.	

Zinc Oxide—

Antwerp,	30 cks.	J. T. Fle
,,	25 brls.	
St. Nazaire,	25	
Rotterdam,	10 cks.	

Zinc Sulphate—

Rotterdam,	10 brls.	

Zinc White—

Rotterdam,	100 cks.	O. & H. M

GLASGOW.

Week ending March 10th.

Aniline Colours—

Rotterdam,	5 cs. 6 cks.	Jas.

Barytes—

Rotterdam,	68 cks.	

Barytes Sulphate—

Antwerp,	20 bgs.	

Chrome Alum—

Rotterdam,	5 cks.	

Dyestuffs—

Alizarine		
Rotterdam,	206 cks.	
Extracts		
New York,	10 brls.	
Antwerp,	4 cks.	
Valonia		
Dragomestre,	112 t.	Martin,

Farina—

Antwerp,	10 bgs.	
Hamburg,	20	

Glucose—

New York,	320 brls.	
Rouen,	12 cks.	

sum—
ren, a quantity.
ganese—
terdam, 3 cks. Jas. Rankine & Son
re—
ren, 19 cks.
n—
w York, 550 brls.
um Acetate—
ren, 8 cks.
rine—
werp, 13 bgs.
ar—
rto, 4 cks.
te Salt—
nburg, 610 bgs.
te Lead—
terdam, 75 cks.
Oxide—
York, 15 brls.
werp, 25 cks.
terdam, 1 Jas. Rankine & Son
burg, 50

HULL.

Week ending March 3rd.

tes—
werp, 43 cks.
ren, 46 Tudor & Sons
werp, 55 Bailey & Leetham
icals *(otherwise undescribed)*
erdam, 2 cs. W. & C. L. Ringrose

Stettin, 73 cks. Wilson, Sons & Co.
Antwerp, 14 ,, ,,
Dunkirk, 2 pks. ,, ,,
Trieste, 84 cks. ,, ,,
Flushing, 1 cs. Zeeland S.S. Co.
Bremen, 3 cks. 7 cs. Veltmann & Co.
,, 1 J. Pyefinch & Co.
New York, 5 Wilson, Sons & Co.

Dyestuffs—
Alizarine
Rotterdam, 22 cks. 69 pks. W. & C. L. Ringrose
Myrabolams
Antwerp, 1 pk. Wilson, Sons & Co.
Bombay, 5,994 bgs.
Trieste, 14
Sumac
Trieste, 30 bls. Wilson, Sons & Co.
Palermo, 640 bgs. ,, ,,
,, 450
Valonia
Smyrna, 1,723 bgs. 290 t.

Farina—
Stettin, 420 bgs. Wilson, Sons & Co., Ltd.

Glucose—
Dunkirk, 87 cks. Wilson, Sons & Co., Ltd.
New York, 300 brls.

Kainit—
Hamburg, 1,108 bgs. Lawson & Sons

Manure—
Amsterdam, 100 bgs. Hirschfield Bros.
Ghent, 100 t. Wilson, Sons & Co.

Oleine—
Dunkirk, 4 cks. Wilson, Sons & Co. Ltd.

Phosphate—
Antwerp, 500 bgs.

Sulphur—
Catania, 1,590 pks. Wilson, Sons & Co.
,, 51 t. 349 pks.

Stearine—
Antwerp, 24 bgs. Wilson, Sons & Co., Ltd.

Soap—
New York, 30 brls. Wilson, Sons & Co.
Bari, 116 cs. ,, ,,

Tannic Acid—
Hamburg, 21 cks. Lawson & Son

Tartar Emetic—
Hamburg, 5 cks. G. Lawson & Son

White Lead—
Antwerp, 76 cks. Bailey & Leetham
Rotterdam, 9 Geo. Lawson & Sons

TYNE.

Week ending March 5th.

Barytes—
Antwerp, 140 cks. Tyne S.S. Co.

Glucose—
Hamburg, 10 cks. Tyne S.S. Co.

Precipitate—
Huelva, 149 t. A. Guthrie

White Lead—
Antwerp, 20 cks. Tyne S.S. Co.

GOOLE.

Week ending February 24th.

Alum—
Rotterdam, 137 cks.

Dyestuffs *(otherwise undescribed)*
Boulogne, 18 cs. 12 cks. 4 pks.
Alizarine
Rotterdam, 52 cks.
Madder
Rotterdam, 3 cks.

Glucose—
Calais, 300 bgs.

Naphthol—
Rotterdam, 6 cks.

Potassium Muriate—
Rotterdam, 76 cks.

Saltpetre—
Rotterdam, 100 bgs.

Waste Salt—
Hamburg 721 cks.

GRIMSBY.

Week ending February 27th.

Chemicals *(otherwise undescribed)*
Rotterdam, 1 pk.
Hamburg, 12

Farina—
Hamburg, 170 bags.

Pitch—
Dieppe, 5 cks.

Zinc Ashes—
Antwerp, 12 cks.

EXPORTS OF CHEMICAL PRODUCTS

OF

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending March 9th.

lic Acid—
terbury, 25 cs. £46
li—
ney, 1 t. 1 c. £4
lbourne, 11 179
n—
at, 1 t. 10 c. £10
terdam, 4 18 11
n Cake—
cutta, 34 t. 19 c. £122
monia—
goon, 1 t. 7 c. £32
terdam, 44 drs. 65
monium Carbonate—
lbourne, 10 c. £15
ssa, 2 t. 55
monium Chloride—
mburg, 3 cks. £19
monium Sulphate—
tterdam, 60 t. 12 c. £660
ent, 70 19 720
aralaya, 1,500 15,380
tend, 45 4 459
enic—
sterdam, 1 t. 3 c. £17
ytes Sulphate—
ghon, 20 cks. £78
e Ash (Superphosphate)—
uritius, 76 t. 8 c. £912
ax—
lbourne, 1 t. £32
mburg, 8 c. 17
tterdam, 2 cks. 28
rlingen, 15 cs. 37
astone—
ca Bay, 50 kgs. £29
bolic Acid—
g Kong, 3 cs. £13
terdam, 4 t. 16 c. 72
London, 1 cs. 11
bonic Acid Gas—
bay, 10 tubes £120

Caustic Soda—
Napier, 5 t. 4 c. £55
Lyttleton, 10 16
Odessa, 200 drs. 733
E. London, 13 21
Natal, 1 14 22
Algoa Bay, 1 13 59

Chemicals *(otherwise undescribed)*
Bombay, 6 c. £17
Sydney, 17 cs. 110
Melbourne, 7 pks. 1 cs. 34
Fremantle, 13 49
New York, 20 603
E. London, 3 pks. 12
Hamburg, 1 cs. 10

Citric Acid—
Cologne, 10 c. £80
Alexandria, 5 40
Amsterdam, 2 kgs. 15
Copenhagen, 15 107
Halifax, 20 144
Sydney, 10 72
Cape Town, 3 cs. 21
Rotterdam, 6 c. 47
Danzig, 2 15
Smyrna, 1 5
Oporto, 8 7 pks. 78
Hamburg, 6 cks. 44 kgs. 35 pks. 798
Moscow, 1 t. 5 c. 180
Barcelona, 2 cks. 74

Coal Products—
Aniline
New York, 3 cks. £164
Sydney, 1 2 cs 30
Aniline Oil
Barcelona, 27 runs. £375
Anthracene
Dusseldorf 106 cks. £1,400
Rotterdam, 43 585
Benzol
Rotterdam, 12 cks. 19 puns. £410
Calais, 39 417
Creosote
Danzig, 125 cks. £85
Creosote Salts
Cologne, 1,247 bgs. £154
Antwerp, 1,467 171

Naphtha
Ghent, 5 bls. 10 cks £45
Treport, 25 54
Naphthaline
Dunkirk, 1 ck. £8
Treport, 44 pks. 38
Pitch
Havre, 451 tons £744
Ancona, 3,152 5,269
Treport, 50 86
Dunkirk, 2,019 3,467
Algoa Bay, 10 cks. 8
Christiania, 100 fkns. 18
Boston, 200 cks. 125
Antwerp, 375 t. 640
Calcutta, 95 runs. 62 brls. 77
New York, 1,000 cks. 503
Tar
Calcutta, 100 runs. £56
Alexandria, 20 cks. 47
Toluol
Rotterdam, 67 runs. £210

Copperas--
Rabat, 1 t. 12 c. £5

Copper Sulphate—
Bordeaux. 20 t. 7 c. £300
Barbadoes, 2 30
Treport, 20 2 271

Cream of Tartar—
Hobart, 2 c. £11
Cape Town, 2 11
Sydney, 5 t. 5 504
E. London 12
Melbourne, 1 91

Disinfectants—
Colombo, 6 c. £14
Sydney, 46 cs. 210
Calcutta, 1 t. 5 c. 10
Wellington, 10 drs. 9

Fertilizers—
Wellington, 120 t. £1,620

Guano—
Morlair, 104 t. £832

Manure—
Bordeaux, 145 t. £625
Genoa, 60 2 c. 450
Gandia, 600 1 5,400
Alicante, 72 16 650
Sydney, 9 19 223
Gothenburg, 73 2 392
Jersey, 35 287
St. Vincent, 5 33
Cape Town, 19 93
Hamburg, 141 18 707
Dunkirk, 5 26
Trinidad, 89 12 788
Ghent, 100 1,100
Sourabaya, 84 8 756
Mauritius, 32 136
Rotterdam, 102 3 443
Barbadoes, 150 1,650
Rouen, 117 600

Mercuric Chloride—
Hamburg, 1 ck. £71

Myrbane—
Melbourne, 10 c. £32

Phosphorus—
Sydney, 10 cs. £61
Melbourne, 5 c. 35

Potash Crystals—
Brussels, 2 c. £10
Melbourne, 1 t. 2 c. 130

Potash Salts—
Natal, 39 t. £5,498

Potassium Chlorate—
Tientsin, 30 cks. £151
Boston, 4 t. 1 c. 255

Potassium Iodide—
Melbourne, 1 c. £61

Potassium Prussiate—
Calcutta, 10 c. £49

Pyrogallic Acid—
Bombay, 3 c. £13

Salammoniac—
Larache, 6 c. £10
Sydney, 11 19
Mersyne, 6 10
Odessa, 4 t. 7 143

Salacetos—
Melbourne, 6 c. £14

Salicylic Acid—
Cape Town, 2 cs. £57

Salt Cake—
Antwerp, 150 t. £263
Saltpetre—
Rio de Janeiro, 1 t. 7 c. £29
Sydney, 1 24
Melbourne, 10 12
Bilbao, 2 10 53
Sheep Dip—
Launceston, 1 t. 18 c. £30
E. London, 1,255 drs. 297
Algoa Bay, 50 cs. 137
Brisbane, 70 drs. 53
Pt. Elizabeth, 225 pks. 112
Silver Nitrate—
Bombay, 1 cs. £40
Lyttleton, 1 c. 119
Silver Nitrate & Gold Chloride—
Bombay, 1 cs. £87
Soda—
Colombo, 3 c. £2
Shanghai, 9 9
Hamburg, 1 t. 15 10
Soda Alkali—
Adelaide, 1 t. 18 c. £9
Natal, 3 7 12
Soda Ash—
Calcutta, 5 t. 6 c. £38
Soda Crystals—
Demerara, 18 c. £3
Colombo, 10 2
Sodium Acetate—
Sydney, 1 t. 3 c. £12
Sodium Bicarbonate—
Barbadoes, 5 c. £2
Cape Town, 3 3
Demerara, 10 4
Napier, 2 2
E. London, 4 3
Sodium Hyposulphite—
Bombay, 8 c. £7
Calcutta, 19 cks. 59
Sodium Oxide—
Hamburg, 1 t. 7 c. £135
Sodium Tartrate—
Melbourne, 5 c. £17
Oporto, 11 37
Sulphur—
Adelaide, 100 t. 19 c. £609
Lisbon, 2 14 43
Sulphur Flowers—
Algoa Bay, 4 t. 9 c. £59
Auckland, 2 17
Sulphuric Acid—
Algoa Bay, 6 t. £21
E. London, 15 cs. 11
Cape Town, 15 c. 8
Antwerp, 18 t. 75
Madras. 1 5 c. 23
Superphosphate—
Hamburg, 63 t. 5 c. £178
Libau, 20 60
Cherbourg, 329 18 990
Morlair, 22 5 67
Barbadoes. 2 30
Bordeaux, 40 242
Tartaric Acid—
Napier, 2 c. £11
Hobart, 1 7
Oporto, 2 13
Sydney, 1 t. 9 155
E. London, 13

LIVERPOOL.

Week ending March 9th.

Alum—
Seville, 4 t. 13 c. £95
San Francisco, 18 12 95
Melbourne 7 36
B. Ayres, 1 4 6
Havana, 10 4 1 q. 109
Beyrout, 4 21
Ammonium Carbonate—
Copenhagen, 1 t. 2 c. 3 q. £37
Stettin, 3 1 5
Ammonium Chloride—
Philadelphia, 13 t. 6 c. 3 q. £259
Havre, 16 2 16
B. Ayres, 6 3 2 145
Ammonium Sulphate—
Valencia, 10 t. 3 q. 225 bgs. £979
Genoa, 15 1 c. 1 158
Barbadoes, 50 16 91 676
New York, 50 12 543
Bordeaux, 15 4 3 161
Baltimore, 25 1 261
Rouen, 115 130
Ghent, 100 11 3 1020
Antimony—
Manaos, 2 c. 2 q. £5
Bleaching Powder—
Bombay, 30 cs.
Boston, 982 cks.
Cape Town, 10
Philadelphia, 41
Calcutta, 30
Ferrol, 2
New York, 163 20 bxs.
San Sebastian, 39
Borax—
Antwerp, 5 t. 9 c. £160
Vera Cruz, 4 6
Rio de Janeiro 4 7
Valparaiso, 5 9
Brimstone—
St Nazaire, 400 bgs. £351
Colombo, 7 brls. 8
Boston, 1669 1347
Calcined Magnesia—
Genoa, 3 q. £100
Carbolic Acid—
Valencia, 1 t. 3 c. £6
New Orleans 17 1 q. 59
Genoa, 12 1 25
New York, 10 2 1 293
Rotterdam, 2 2 6
Yokohama, 3 150
Odessa, 4 3 13
M. Video, 10 28
Rosario, 2 13
New York, 11 8 2 344
Carbolic Acid Crystals—
Baltimore, 8 t. 2 c. £304
Caustic Potash—
New York, 1 t. 5c. £27
Caustic Soda—
Alicante, 20 cks. 20 dms.
Bilbao, 56 28
Boston, 275
B. Ayres, 20
Catania, 35
La Guayra, 20
Leghorn, 69
Lisbon, 118 30 brls.
Matanzas, 25
M. Video, 250
Philadelphia, 200
RioGrande doSul 100 30 kgs.
Rotterdam, 92 5 cks.
Yokohama, 100
Ancona, 2
Antwerp, 15
Baltimore, 135 brls.
Beyrout, 50
Bilbao, 50
Callao, 30
Carthagena (S.), 10 cks.
Fiume, 75
Genoa, 120
Havana, 120
Ibrail, 10
Malaga, 12
Montreal, 100
Newcastle, N.S.W 72
New York, 460 18 bxs.
Salonica, 4
San Francisco, 20
Santander, 20
Santiago de Cuba, 25
Santos, 50
Singapore, 40 kgs.
Talcahuano, 230
Tarragona, 7
Trieste, 10
Cobalt Oxide—
Valencia, 3 q. £25
Copperas—
Alexandretta, 10 t. 17 c. 2 q. £22
Piræus, 4 7 9
Salonica, 3 4 7
Copper Sulphate—
Nantes, 5 t. 16 c. 2 q. £81
Bordeaux, 42 15 2 660
Gothenburg, 1 17 2 26
Trieste, 5 5 2 75
Genoa, 11 149
Batoum, 4 19 2 73
Mauritius, 30 1 1 436
Antwerp, 2 9 37
Nantes, 70 1 1 1140
Dunkirk, 19 6 3 150
Marseilles, 244 9 2 3727
Leghorn, 3 2 42
Piræus, 1 2 2 16
Barcelona, 50 4 3 706
Venice, 21 1 269
Wellington, N.Z., 5 6
Chemicals *(otherwise undescribed)*
Havre, 5 t. 2 c. 1 q. £202
Halifax, 1 3 4 38
Genoa, 3 5
Constantinople, 8 13
M. Video, 1 2 1 33
Lyttleton, 10 20
Naples, 1 35
Marseilles, 1 1 2 45
Galatz, 10 18
New York, 15 css. 200
Citric Acid—
Piræus, 4 c. £31
Lisbon, 3 23
Cream of Tartar—
B. Ayres, 4 c. £22
Victoria, V. I., 2 1 q. 13
Disinfectants—
Bombay, 3 c. £14
Epsom Salts—
Constantinople, 10 brls.
Rio de Janeiro, 120 kgs.
Alexandria, 100
Porto Alegre, 2 c.
Guano—
Tarragona, 76 t. £642
Bilbao, 2 10 c. 1 q. 21
Liquid Ammonia (Anhydrous)—
Wellington, 3 c. 1 q. £40
Magnesium Chloride—
Bombay, 4 t. 2 c. 3 q. £15
Manure—
Bordeaux, 49 t. 5 c. £143
Genoa, 134 5 3 q. 480
Havre, 200 1 3 640
St Nazaire, 550 16 2 1,620
Valencia, 60 160
Denia, 43 172
Oxalic Acid—
Venice, 13 c. 2 q. £19
Phosphorus—
Yokohama, 45 cs. £493
B. Ayres, 20 140
Kingston, 1 c. 9
Shanghai, 10 cs. 62
Pitch—
Ancona, 1,482 t.
Bilbao, 40 brls.
Bordeaux, 107
St. John's (Nfd.), 50
Potassium Bicarbonate—
B. Ayres, 4 c. £7
Potassium Bichromate—
Seville, 7 c. 3 q. £13
Potassium Carbonate—
Boston, 3 t. 11 c. £102
Potassium Chlorate—
Vera Cruz, 1 t. 16 c. 3 q. £99
Bilbao, 10 28
Trieste, 10 30
Philadelphia, 2 10 117
Oporto, 10 28
Hamburg, 1 62
Gothenburg, 21 978
Hong Kong, 1 10 69
Sydney, 7 10 342
New York, 15 347
Rio de Janeiro, 2 10 119
Odessa, 1 46
M. Video, 2 10 114
Manaos, 2 5
Potassium Prussiate—
Seville, 3 c. 16
Salammoniac—
Bilbao, 16 c. 2 q. £26
Bombay, 10 t. 19 372
Patras, 2 3 5
Philadelphia, 2 12 7 87
Catania, 13 2 21
Salt—
Antwerp, 50 t.
Belize, 5
Calcutta, 3,870
Chicago, 295
Halifax, 880
Isles de Los, 25
Mauritius, 200
New York, 120
Para, 183 11 c.
St. John's(Nfd.), 40
Akassa, 400
Hamburg, 38 5
Manoh, 33 9
Pt. Natal, 488
San Francisco, 200
Saltcake—
Philadelphia, 151 t. 18 c. £396
Foullon Falls, 25 cks.
Saltpetre—
Barcelona, 7 t. 18 c. 2 q. £147
Gd. Canary, 3 8 3 73
Piræus, 15 323
Para, 2 14
Ferrol, 14 cwt.
Chala, 6 cwt. 2
Buenos Ayres, 10 cwt.
Natal, 5 2
Santos, 1 5
Manaos, 4
Cephalonia, 8 3
Halifax, 5
Sheep Dip—
Buenos Ayres, 16 t. 18 c.
Soap—
Amsterdam, 100 bxs.
Antwerp, 61 css.
Barbadoes, 500 bxs. 2 css.
Belize, 490
Buenos Ayres, 1
Calcutta, 250 brls. 25
Cape Town, 79
Curacao, 360
E. London, 10 4
Genoa, 175
Ghent, 63
Hamburg, 259
Kingston, Jam., 100
Lagos, 140
Leghorn, 1
Lucea, 90
Malta, 30 cs.
St. Croix, 250 bxs.
St. Thomas, 600
San Juan del Sur, 100
Santiago de Cuba, 1
Shanghai, 2,290
Sierra Leone, 400
Toronto, 400
Warre, 400
Aden, 100
Alexandria, 20
Algoa Bay, 250
Axim, 40
Bombay, 5 36
Gd. Canary, 230
Guadeloupe, 1,500
Hiogo, 205
Las Palmas, 55
Manaos, 1,100
New York, 225 2 cks.
Old Calabar, 100
Pt. Natal, 20
Teneriffe, 614
Trinidad, 2,067
Soda Alkali—
Adelaide, 50 brls.
Barcelona, 270
Bilbao, 52
Buffalo, 60
Catania, 55
Newcastle-on-Tyne, 17
Odessa, 35
Sydney (N.S.W.), 45
Soda Ash—
Alicante, 4 cks.
Bombay, 40 brls.
B. Ayres, 22 520
Christchurch, 7
Dunedin, 6
Hamilton, 600 kgs.
Kingsey,
M. Video, 40
Napanee,
Pelotas, 30
Puerto Cabello, 42
Rio Grande do Sul, 25
Rio de Janeiro, 50
Sherbrooke,
Wellington (N.Z.), 70 cks.
Ancona, 16
Baltimore, 553
Beyrout, 100 brls.
Boston, 323 cks. 600 bgs.
Corfu, 100 brls.
Kobe, 130
Mitylene, 100
New York, 311 cks. 925
Paysandu, 100 brls.
Philadelphia, 80 cks. 320
Porto Alegre, 75 brls.
Rosario, 33
San Francisco, 142 cks.
Valparaiso, 5 brls.
Soda Crystals—
Boston, 1,200 kgs. 280 cks.
Hamburg, 100 bgs.
Malta,
Montreal, 59 kgs.
St. John's (Nfd.) 100
Bombay, 10
Calcutta,
Callao, 30 dms.
Constantinople,
Halifax, 55
Hong Kong, 50 cks.
Philadelphia,
Valparaiso,

m Arseniate—
n, 4 brls.

m Bicarbonate—
andria, 40 brls.
nte, 50 kgs.
erdam, 26 13 cks.
land, 77
elona, 260 50 brls.
bay, 150 4 cks.
tta, 525 40 bgs.
nia, 70
tchurch, 20
tantinople, 80
nhagen, 20 4 cks.
din, 200
z, 110
burg, 85
re, 230 37 brls.
il, 15
orn, 50
ier, 40
les, 50 7 cks.
sa, 800 2
us, 25 brls. 4 cks.
ohns(Nfd.). 30 kgs.
ica, 20
na, 40
ouver (V.I.,) 25
e, 20
ngton (N.Z.) 132
agena (S.), 40
ia, 20
ig, 20 1 brl.
ax, 200 6
o. 1,000
eilles, 80
ptam, 45
rdam, 60
e, 40 5
pore, 9 cks.
hama, 1,600

m Bichromate—
rdam, 1 ck.
, 5 c. 1 q. £8
s, 3 t. 14 c. 100

m Bisulphate—
s, 4 c. £30
chee, 1 t. 19 c. 6

m Carbonate—
n, 168 brls.

m Chlorate—
erp, 10 kgs.
burg, 1 t. 10 c. £93

m Nitrate—
ria, 40 bgs.
agena, 10 t. 2 c. 2 q. £98
ria, 15 9 155
real, 1 6 12
l, 1 3 11

m Sulphate—
tta, 6 dms.
cia, 30 brls.
6 t. 12 c. 3 q. £15

m Silicate—
tantinople, 30 cks.
e, 10
nia, 20 brls.

tium Sulphate—
rdam, 2 t. 5 c. £18

tur—
Orleans, 1 t. 1 c. £9

ur Flowers—
n, 4 t. 8 c. 1 q. £41

uric Acid—
Grande do Sul, 19 c. 2 q. £10
le Janeiro, 16 c. 16

phosphate of Lime—
cia, 60 t. £170

Chloride—
bay, 5 t. 7 c. 3 q. £103
ritius, 4 6

Oxide—
Francisco, 5 t. £100

GLASGOW.

Week ending March 10th.

onia—
gua, 15 t. 10 c. £160
g Kong, 1 12 38

onium Sulphate—
gua, 50 t. 13 c. £554
adoes, 11 19 130
idad, 146 1,625
cia, 162 2½ 1,744
erara, 76 16 £846 10s.
, 351 11 £3,894

Benzol—
Rotterdam, 20 drms. £290

Coal Tar—
Russia, 163 t. 17½ c. £345

Coal Tar Pitch—
Oporto, 250 t. £310
Russia, 151 300
Bordeaux, 32½ 48

Copperas—
Bordeaux, 5 t. 4½c. £65

Creosote Oil—
Boston, 22 t. 4 c. £63

Dyestuffs—Cutch
Rotterdam, 11¼ c. £17

Dyestuffs—Extracts
Halifax, 13 c. £21 11s.

Dyestuffs—Indigo
Melbourne, 23¾ c. £45

Guano—
Demerara, 30 t. £360

Manure—
Barbadoes, 30 t. £230
Demerara, 62 3¼ c. £620

Painters' Colours—
Jamaica, £46
Rotterdam, 17 cks. 70
Adelaide, 90

Paraffin Wax—
Turkey, 524¼ c. £1,054
Valencia, 7 t. 8½ 252
Japan, 36 14¼ 1,020
Melbourne, 11 13 300

Phosphate Meal—
Valencia, 19 t. 13 c. £40

Potash—
Antigua, 9 t. 18 c. £37

Potassium Bichromate—
Rotterdam, 4 cks. £22
Turkey, 17
Valencia, 21 t. 12½ c. 870
Amsterdam, 1 ck. 7

Soda—
Jamaica, 10 t. 15½ c. £180
Colombo, 28 27

Sodium Bichromate
Valencia, t. ¼ c. £30

Sodium Bisulphate—
Melbourne, 23 c. £103

Sodium Nitrate—
St. Kitts, 14 t. 9½ c. £125

Stannous Chloride—
Trinidad, £55

Sulphuric Acid—
Trinidad, 4 t. 42½ c. £25
Demerara, 3 25
Madras, 15 70

Sulphate of Lime—
Bordeaux, 8 t. 4 c. £80

White Lead—
Straits, 79 c. £70
China, 113 100
Halifax, 63 43

HULL.

Week ending March 1st.

Alkali—
Bergen, 2 cks.

Bleaching Powder—
Genoa, 9 cks.
Venice, 25

Borax—
Amsterdam, 5 cks.
Gothenburg, 1 cs.

Calcium Sulphate—
Gothenburg, 20 cks.

Caustic Soda—
Antwerp, 1 dm.
Bari, 31
Catania, 25
Fiume, 17
Genoa, 12
Leghorn, 20
Naples, 29
Trieste, 6
Venice, 50

Chemicals (*otherwise undescribed.*)
Antwerp, 20 cs. 1 ck.
Amsterdam, 4 12 pks.
Bergen, 4
Christiania, 25 42 67
Fiume, 50
Genoa, 1 46
Gothenburg, 7
Hamburg, 75 9 52
Libau, 2
New York, 100
Naples, 10
Rotterdam, 42 13 1
Reval, 2
Rouen, 15
Stettin, 2
Trieste, 45
Venice, 3

Cottonseed Oil—
Antwerp, 100 c.
Amsterdam, 102
Bergen, 7
Fiume, 102
Flushing, 363
Gothenburg, 40
Hamburg, 1,306
Rotterdam, 1,829
Stavanger, 7
Trieste, 1,725

Creosote—
Fiume 5 cks.

Dyestuffs (*otherwise undescribed*)
Antwerp, 1 drm.
Stettin, 144 brls.

Dyestuffs—Logwood
Stettin, 180 bgs.

Linseed Oil—
Antwerp, 21 c.
Bergen, 80
Christiania, 166
Drontheim, 45
Fiume, 43
Gothenburg, 7
Hamburg, 237
Stavanger, 28

Manure—
Antwerp, 227 bgs
Dunkirk, 490
Marseilles, 479

Naphtha—
Antwerp, 4 dms. 8 cks.

Ochre—
Amsterdam, 10 cks.

Painters' Colours—
Antwerp, 2 cs. 46 cks. 358 pks.
Amsterdam, 1
Bergen, 12 dms. 2 20
Christiania, 102 20 132
Christiansand, 86
Dunkirk, 13
Genoa, 3 cs. 12
Hamburg, 33
Messina, 1
New York, 400 116
Naples. 5
Rotterdam, 1
Reval, 3 cs. 1 dm.
Rouen. 28
Stavanger, 1 ck. 26
Stettin 2 4 cs.
Venice, 8

Pitch—
Antwerp, 290 t.
Leghorn, 157
Dunkirk, 274

Soap—
Gothenburg, 20 cs.

Varnish—
Antwerp, 1 cs. 2 pks.
Amsterdam, 5 cks.
Christiania, 5 dms.
Genoa, 2
Gothenburg, 1
Hamburg, 8 css.
Rotterdam, 4
Stavanger, 1

TYNE.

Week ending March 5th.

Alkali—
Antwerp, 111 c.
Arendal, 41
Savona, 659

Anthracene—
Rotterdam, 487 c.

Barytes Carbonate—
Rotterdam, 280 c.

Bleaching Powder—
Odessa, 734 c.
Antwerp, 333
Rotterdam, 743
Carthagena, 41
Bergen, 113
Gothenburg, 29
Libau, 1,995
Copenhagen, 721
Venice, 88

Borax—
Ergasteria, 16 c.

Caustic Soda—
Odessa, 228 c.
Antwerp, 203
Rotterdam, 116
Copenhagen, 203
Philadelphia, 435
Barcelona, 538

Hydrochloric Acid—
Ergasteria, 7 c.

Litharge—
Copenhagen, 5 c.

Magnesia—
Hamburg, 13 c.
Antwerp, 1
Barcelona, 110

Ochre—
Christiania, 85 c.

Oxalic Acid—
Copenhagen, 7 c.
Barcelona, 227

Soda—
Antwerp, 107 c.
Philadelphia, 3,087

Soda Ash—
Hamburg, 644 c.
Libau, 24
Gothenburg, 1,000

Sodium Bicarbonate—
Christiania, 60 c.

Sodium Hyposulphite—
Barcelona, 23 c.
Philadelphia, 100 c.

Sulphur—
Hamburg, 50 c.
Antwerp, 350

Superphosphate—
Venice, 2,940 c.

White Lead—
Copenhagen, 22 c.

GOOLE.

Week ending February 24th.

Alkali—
Dunkirk, 30 drs.

Benzol—
Rotterdam, 48 cks.

Bleaching Powder—
Ghent, 15 cks.

Chemicals (*otherwise undescribed*)
Antwerp, 2 cks.
Hamburg, 22
Rotterdam, 7

Dyestuffs (*otherwise undescribed*)
Boulogne, 3 pks.

Ferro Manganese—
Bruges, 13 cks.

Manure—
Bruges, 300 bgs.
Dunkirk, 168
Ghent, 1,070
Hamburg, 300

Pitch—
Antwerp, 490 t.

GRIMSBY.

Week ending February 27th.

Chemicals (*otherwise undescribed*)
Antwerp, 3 cs.
Dieppe, 54 cks. 9 pks.
Hamburg, 25 pks. 5 cs. 6 cks.
Rotterdam, 10 cks. 5 pks.

Coal Products—
Dieppe, 3 cs. 140 cks.

Manure—
Hamburg, 267 bgs.

PRICES CURRENT.

WEDNESDAY, MARCH

PREPARED BY HIGGINBOTTOM AND CO., 116, PORTLAND STREET, MANCHESTER.

The values stated are F.O.R. at maker's works, or at usual ports of shipment in U.K. The price in different localities

	£	s.	d.
Acids:—			
Acetic, 25 °/₀ and 40 °/₀ .. .. per cwt.	7/- & 11/-		
,, Glacial .. .. ,,	50/-		
Arsenic, S.G., 2000° .. .. ,,	0	13	6
Fluoric .. .. per lb.	0	0	3¾
Muriatic (Tower Salts), 30° Tw. .. .. .. per bottle	0	0	10
,, (Cylinder), 30° Tw. .. .. ,,	0	3	0
Nitric 80° Tw. .. .. per lb.	0	0	2¼
Nitrous .. .. ,,	0	0	1¾
Oxalic .. .. nett ,,	0	0	3
Phosphoric, 1750° .. .. ,,	0	1	2½
Picric .. .. ,,	0	0	10¼
Sulphuric (fuming 50 °/₀) .. .. per ton	15	10	0
,, (monohydrate) .. .. ,,	5	10	0
,, (Pyrites, 168°) .. .. ,,	3	5	0
,, (,, 150°) .. .. ,,	1	5	0
,, (free from arsenic, 145°) .. .. .. ,,	1	7	6
Sulphurous (solution) .. .. ,,	2	15	0
Tannic (pure) .. .. per lb.	0	1	2
Tartaric .. .. ,,	0	1	0
Arsenic, white powdered .. .. nett per ton	10	17	6
Alum (loose lump) .. .. ,,	5	5	0
Alumina Sulphate (pure) .. .. ,,	5	0	0
,, ,, (medium qualities) .. .. .. ,,	4	15	0
Aluminium .. .. per lb. 2s. 8d. to	0	3	2
Ammonia, ·880=28° .. .. per lb.	0	0	3
,, =24° .. .. ,,	0	0	1¾
,, Carbonate .. .. nett ,,	0	0	3¼
,, Muriate .. .. per ton	21	0	0
,, ,, (sal-ammoniac) 1st & 2nd .. per cwt.	35/- & 33/-		
,, Nitrate .. .. per ton	40	0	0
,, Phosphate .. .. per lb.	0	0	10½
,, Sulphate (grey), London .. .. .. per ton	10	5	0
,, ,, (grey), Hull .. .. ,,	10	5	0
Aniline Oil (pure .. .. per lb.	0	0	7¾
Aniline Salt ,, ... ,,	0	0	6¾
Antimony .. .. per ton	70	0	0
,, (tartar emetic) .. .. per lb.	0	1	0
,, (golden sulphide) .. .. ,,	0	0	10
Barium Chloride .. .. per ton	7	15	0
,, Carbonate (native) .. .. ,,	3	10	0
,, Sulphate (native levigated) .. .. .. ,,	45/- to	75/-	
Bleaching Powder, 35 % .. .. nett ,,	7	10	0
,, Liquor, 7 % .. .. ,,	2	10	0
Bisulphide of Carbon .. .. ,,	11	15	0
Chromium Acetate (crystal .. .. per lb.	0	0	6
Calcium Chloride .. .. per ton	2	5	0
China Clay (at Runcorn) in bulk .. .. .. ,,	17/6 to	35/-	
Coal Tar Dyes:—			
Alizarine (artificial) 20 % .. .. per lb.	0	0	8¾
Magenta .. .. ,,	0	3	9
Coal Tar Products			
Anthracene, 30 % A, f.o.b. London .. per unit per cwt.	0	1	2½
Benzol, 90 % nominal .. .. .. per gallon	0	2	1
,, 50/90 ,, ... ,,	0	1	6
Carbolic Acid (crystallised 40°) .. .. .. per lb.	0	0	5
,, (crude 60°) .. .. per gallon	0	1	2
Creosote (ordinary) .. .. ,,	0	0	1
,, (filtered for Lucigen light) .. .. ,,	0	0	2
Crude Naphtha 30 % @ 120° C. .. .. .. ,,	0	0	11
Grease Oils, 22° Tw. .. .. per ton	2	5	0
Pitch, f.o.b. Liverpool or Garston .. .. .. ,,	1	14	0
Solvent Naphtha, 90 % at 160° .. .. .. per gallon	0	1	0
Coke-oven Oils (crude) .. .. ,,	0	0	3
Copper .. .. per ton	46	7	6
,, Sulphate .. .. ,,	14	10	0
,, Oxide (copper scales) .. .. ,,	45	0	0
Glycerine (crude) .. .. ,,	13	0	0
,, (distilled S.G. 1250°) .. .. ,,	45	0	0
Iodine .. .. nett, per oz.	0	0	9
Iron Sulphate (copperas) .. .. per ton	1	12	6
,, Sulphide (antimony slag) .. .. ,,	2	0	0
Lead (sheet) for cash .. .. ,,	12	5	0
,, Litharge Flake (ex ship) .. .. ,,	14	5	0
,, Acetate (white ,,) .. .. ,,	25	10	0
,, ,, (brown ,,) .. .. ,,	17	10	0
,, Carbonate (white lead) pure .. .. .. ,,	20	0	0
Nitrate .. .. ,,	20	5	0
Lime, Acetate (brown) .. .. per ton			
,, ,, (grey) .. .. ,,			
Magnesium (ribbon and wire) .. .. per oz.			
,, Chloride (ex ship) .. .. per ton			
,, Carbonate .. .. per cwt.			
,, Hydrate .. .. per ton.			
,, Sulphate (Epsom Salts) .. .. per ton			
Manganese, Sulphate .. .. ,,			
,, Borate .. .. per cwt.			
,, Ore, 70 % .. .. per ton			
Methylated Spirit, 61° O.P. .. .. per gallon			
Naphtha (Wood), Solvent .. .. ,,			
,, ,, Miscible, 60° O.P. .. .. .. ,,			
Oils:—			
Cotton-seed .. .. per ton			
Linseed .. .. ,,			
Lubricating, Scotch, 890°—895° .. .. ,,			
Petroleum, Russian .. .. per gallon			
,, American .. .. ,,			
Potassium (metal) .. .. per oz.			
,, Bichromate .. .. per lb.			
,, Carbonate, 90% (ex ship) .. .. .. per ton			
,, Chlorate .. .. per lb.			
,, Cyanide, 98% .. .. ,,			
,, Hydrate (Caustic Potash) 80/85 % .. per ton			
,, ,, (Caustic Potash) 75/80 % .. ,,			
,, ,, (Caustic Potash) 70/75 % .. ,,			
,, Nitrate (refined) .. .. per cwt.			
,, Permanganate .. .. per cwt.			
,, Prussiate Yellow .. .. per lb.			
,, Sulphate, 90 % (ex ship) .. .. .. per ton			
,, Muriate, 80 % (do.) .. .. ,,			
Silver (metal) .. .. per oz.			
,, Nitrate .. .. ,,			
Sodium (metal) .. .. per lb.			
,, Carb. (refined Soda-ash) 48 % .. nett per ton			
,, ,, (Caustic Soda-ash) 48 % .. ,, ,,			
,, ,, (Carb. Soda-ash) 48% .. .. ,, ,,			
,, ,, (Carb. Soda-ash) 58 % .. .. ,, ,,			
,, ,, (Soda Crystals) .. .. .. ,, ,,			
,, Acetate (ex-ship) .. .. ,,			
,, Arseniate, 45 % .. .. ,,			
,, Chlorate .. .. per lb.			
,, Borate (Borax) .. .. nett, per ton.			
,, Bichromate .. .. per lb.			
,, Hydrate (77 % Caustic Soda) (f.o.b.) nett pr. ton			
,, ,, (74 % Caustic Soda) ,, ,, ,,			
,, ,, (70 % Caustic Soda) ,, ,, ,,			
,, ,, (60 % Caustic Soda) .. ,, ,,			
,, ,, (60 % Caustic Soda, cream) (f.o.b.) ,,			
,, Bicarbonate .. .. ,,			
,, Hyposulphite .. .. ,,			
,, Manganate, 25% .. .. ,,			
,, Nitrate (95 %) ex-ship Liverpool .. .. per cwt.			
,, Nitrite, 98 % .. .. per ton			
,, Phosphate .. .. ,,			
,, Prussiate .. .. per lb.			
,, Silicate (glass) .. .. per ton			
,, ,, (liquid, 100° Tw.) .. .. .. ,,			
,, Stannate, 40 % .. .. per cwt.			
,, Sulphate (Salt-cake) .. .. per ton.			
,, ,, (Glauber's Salts) .. .. ,,			
,, Sulphide .. .. ,,			
,, Sulphite .. .. ,,			
Strontium Hydrate, 100% .. .. ,,			
Sulphocyanide Ammonium, 95 % .. .. per, lb.			
,, Barium, 95 % .. .. ,,			
,, Potassium .. .. ,,			
Sulphur (Flowers) .. .. per ton.			
,, (Roll Brimstone) .. .. ,,			
,, Brimstone: Best Quality (nominal) .. ,,			
Superphosphate of Lime (26 %) .. .. ,,			
Tallow .. .. ,,			
Tin (English Ingots) .. .. ,,			
,, Crystals .. .. per lb.			
Zinc (Spelter) .. .. per ton			
,, Chloride (solution, 96° Tw.) .. .. ,,			

10 ton lots

THE

CHEMICAL TRADE JOURNAL

AND

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. 253. SATURDAY, MARCH 26, 1892. Vol. X.

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Notices.

ommunications for the *Chemical Trade Journal* should be d, and Cheques and Post Office Orders made payable to—

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unications for the Editor, if intended for insertion in the week's issue, should reach the office not later than **Tuesday ng.**

rs are invited to forward items of intelligence, or cuttings from spapers, of interest to the trades concerned.

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s, reports, and correspondence on all matters of interest to the and allied industries, home and foreign, are solicited, ndents should condense their matter as much as possible, one side only of the paper, and in all cases give their names esses, not necessarily for publication. Sketches should be parate sheets.

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dvertisements, Announcements in the Directory Columns, and all Adver- ot prepaid, are charged at the Tariff rates which will be forwarded on

isements intended for insertion in the current week's issue ach the office by **Wednesday morning** at the latest.

GAS MATTERS.

A CUTTING from a St. Helens newspaper, to be found in another column, is, perhaps, a record of a discussion of more importance to the gas consumer than anything we have had to chronicle for some time past. It is somewhat surprising that when a district is supplied with gas by a private company, very exacting provisions and penalties are provided for the due fulfilment of the terms promised when Parliament granted the monopoly; but when a corporation or local board is the supplier, no adequate provision is made for the protection of the gas consumer, or to ensure that he receives what he is called upon to pay for.

The gas consumer is entirely at the mercy of the supplier. The minutes of the St. Helens Council show that an apparatus to test the gas for illuminating power will cost at least £100, and at present we only know *one* ratepayer in the United Kingdom who has erected a photometer for privately testing a gas supply, which is not to be wondered at, considering the cost.

As a rule, the photometer is placed at the gasworks, to which there are very obvious objections, and the St. Helens Town Council have done the right thing in deciding that the testing station should be at the Town Hall. In another place we have for years past advised the adoption of this system, and we feel sure that if this principle were followed by all Municipal Corporations and Local Boards, there would be fewer complaints of the deficiency of illuminating power. We have nothing to say regarding the accuracy of any gas analyst's figures—we believe them to be perfectly *bonâ fide*—but they only show at the most that at that particular portion of a certain hour in the day, gas of a certain quality was passing through the photometer, and there is no guarantee whatever that would satisfy any ordinary business man that such tests as are made in the majority of cases, represent the *whole* of the gas sent out from the works. In London the case is different, the testing stations are away from the gas works and connected with the ordinary mains of supply—the results are satisfactory and not open to the slightest question. Why, then, cannot similar conditions be imposed upon provincial manufacturers of gas?

Parliament may perhaps consider that when a municipal Corporation manufactures and supplies its own burgesses with gas there is no need to impose conditions rendered necessary when a district is supplied by a private company, and if the term "gas-consumer" was synonymous with "ratepayer" we could agree to this view; but when very large profits are taken from the undertaking, practically from the gas consumer's pocket, we think that a little more care should be exercised in ensuring that one portion of the community does not unduly benefit at the expense of the other.

It is with much pleasure that we have to record the above action of the St. Helens Council. The movement was perfectly spontaneous on their part, with an earnest desire to arrive

at the truth, and we recommend their doings to the notice of other Corporations where the quality of the gas is so frequently assailed. One would only have thought it natural that when gas consumers repeatedly complained in the public press of the quality of the gas, that every enquiry possible would be made by testing at the point from which the complaints emanated, but, from cases that have come under our cognizance, nothing of the sort is ever attempted Another circumstance also greatly surprises us, and that is the apathy which some Local Boards and Rural Sanitary Authorities manifest towards such questions as the one under consideration. When a district is supplying gas from its own works the governing authorities may fancy they have sufficent control to ensure the gas consumer receiving what he pays for without any special effort on their part; but it is evident the case is very different when the supply and manufacture is beyond their control. It is therefore surprising that each out-district in all such cases has not seen the advisability of fitting up in their town hall or municipal offices a photometer for the regular testing of the illuminating power of its gas supply in order to keep the suppliers up to details of their bargains.

There are some manufacturing Corporations who cannot understand why people complain of the poor illuminating quality of the gas supply when it is tested to as much as 18 candles at the works, but if they would only remember that gas consumers are but human, and that when these individuals find from experience that they can see better with the sixteen candles gas of another works than they can with their own of reputed eighteen candles, they begin to imagine there is "something rotten in the state of Denmark."

PAPER-MAKING AND RIVER POLLUTION.

THE Joint Rivers Committee, dealing with the watershed of the Ribble, met last week at Preston. In the absence of the Right Hon. J. T. Hibbert, Mr. T. Lightbown took the chair. The Deputy Clerk (Mr. Muspratt) reported that replies had been received from 54 out of 57 local authorities to whom the Committee had addressed their circular with reference to river pollution. The authorities which had not replied were the Southport Corporation and the Blackburn and Bolton Rural Sanitary Authorities. An analysis of replies received showed that 27 authorities had sewage schemes in operation, eight had schemes under consideration, two others had them in progress, and in 13 there were no sewage works at all. The report being incomplete it was decided that this matter should be left over until next meeting.—Mr. W. Naylor, Chief Inspector for the watershed, submitted his report for the month, which stated :—

During the past month the examination of the river Ribble has been continued, and the western section, extending from the Calder confluence to the estuary, inclusive of the Darwen and its affluents, completed. This area collects the drainage of 200 square miles, and bears a population of 311,500. It is questionable whether the sewage pollution of this population is as serious as that of the upper section, because, firstly, a large portion enters the river at points below the tidal influence, and, secondly, the remaining portion is from a population very much scattered, and must be subject to considerable purification by sedimentation, aëration, and filtration naturally. Nevertheless, much remains to be done by the local authorities in this area, as regards collection and disposal of sewage satisfactorily. The following have been noted as suffering sewage to flow to the rivers unmolested in any way :—The Urban Sanitary Authorities of Great Harwood, Rishton, and Longridge; Hoghton, in the Chorley Rural Sanitary District; Wilpshire and Pleasington, in the Blackburn Rural Sanitary District; Ribchester, in the Preston Rural Sanitary District; and Whalley, in the Clitheroe Rural Sanitary District. The following intercept, in the whole or in part, but as yet make no attempt at purification : —The Urban Sanitary Authorities of Clayton-le-Moors, Fulwood, Walton-le-dale, Kirkham, and Lytham; and the county borough of Preston. The two remaining Authorities only intercept and treat sewage, and that inefficiently. These are the county borough of Blackburn and the municipal borough of Darwen. The former of these two Authorities has no precipitation tanks in operation, and the irrigation area is inefficient, while at the latter place the tanks are too small for the present population, irrigation area wholly lacking. A sample of the Darwen effl taken under favourable conditions, but at Blackburn this is unn as one is saluted with an odour of sewage some distance below lesbury outlets, and that at a time of the year when the farme most likely to utilise sewage, if at all. That the land of the bury farm is either impermeable or not sufficiently under-d suggested by the fact that the raw sewage conducted thereo flows over the surface to a lower level, eventually forming inky down the high banks of the river, leaving a small percentage undergo the necessary process of filtration and nitrification in t of the soil. The whole of the forementioned authorities clai schemes under consideration. Visits have been paid to, an made concerning, fourteen paper mills, one paper-staining chemical works, two dye works, one tar distillery, and n cotton factories.

Most of this month's work has been on the Darwen, where t trade is largely represented. One instance only was noted w solids were thrown into the Darwen from a paper mill, but t suspended, and very distinctly visible, in paper mill refuse, are A large quantity of soda still finds its way into the river fro mills, although it is a fact, known widely outside the paper tr it can easily be recovered, and, further, at each of the mil evaporating plant has been erected, I am informed that it is a profit. The evaporation of soda has very important secondar in lessening pollution. (*a*) Soaps formed in the boilers fr matters on the raw material are burnt in the incinerator or eventually; and (*b*) in washing the boiled raw material or half any soda retained in the interstices of the fibre, an amount of organic matter is always washed out which also goes right alo incinerator and is burnt. The annual consumption of soda a Darwen is 3,300 tons. Evaporating plant is installed at th having an aggregate consumption of 1,720 tons. Assuming remainder is used in the process of boiling, there is a residue 800 tons thrown into the river annually. But, granting that t of the soda has been eliminated from the paper mill refus remains a thick coloured waste liquor from the washers, beating and paper machines, bearing the dirt from the rags, Surat bagg according to the nature of the mill. From returns kindly sup paper-making firms on the Darwen, it is estimated that in t alone the consumption of raw material is annually—10,300 t 12,400 tons straw and esparto ; 4,700 tons ropes, Surat bagging &c.; 3,000 tons waste paper, peat, &c.; giving a total of 30,40 be washed. There are used in addition about 18,000 tons m wood pulp, 950 tons chemical wood pulp, which, while req washing, will lose some proportion as waste during manipulati filthy condition of some of this raw material is worthy of note albuminoid ammonia being as high in an average of six repre samples of paper waste as in the average urban sewage, namel per 100,000. But the point calling for earliest attention is the of solids in suspension, as these could be lessened to a gre without plant or apparatus, coupled with maintaining cost, their importance as polluting agencies. The average suspend in white-paper mills is 85·1 ; brown-paper mills, 98·1 ; ditto solids, white-paper mills, 80·1 ; ditto brown-paper mills Quantity of water turned into river by white-paper mills, 2¾ gallons per day ; ditto brown-paper mills, ¼ mill. galls. per d 3 mill. galls. daily. A deduction, however, should here be mad brown-paper mills, as they use, in most instances, river water already contaminated by the white-paper mills ; but, allowing benefit of creating no more pollution than the white-paper mills, uniform waste, bearing in suspension 85 grains per gallon, and h solution 80 grains per gallon, or 5,000 tons per annum of s solids, and 4,700 tons per annum of dissolved solids, at six week, and this amount, large as it appears (only 20% of material used), is rather under than over the mark, allowing an initial burden of 20 grains per gallon dissolved solids. found upon experiment that a mixture of white mill refuse of suspended solids by subsidence only, and a mixture of br refuse lost 85% by subsidence only. If, therefore, this refuse turned into a receptacle allowing a subsidence before entering much good would be done. But such receptacles must absolute quiescence ; continuous tanks are useless, as the extremely light and finely divided. The continuous tanks Vale Paper Mill, of 27,000 gallons capacity, brought about a of two per cent only in suspended solids, and the effect at Lodge, Clitheroe, is about the same, but at both places additional treatment. The great *desiderata* at paper evaporating plant and receptacles in duplicate to hold six hou at the least, and the sooner steps are taken in this direction it will be for the River Darwen. In the discussion of thes with gentlemen in the paper trade, inspectors are treated w courtesy, and I am strongly of opinion that, on the whole, willing to meet the reasonable demands of this committee.

expense would be incurred in providing plant for evaporation, and pended entirely on the value of soda ash whether the outlay was merative or not. Speaking generally, however, he thought inspector had received correct information when he said the pro- n of such plant would remunerate manufacturers in the end. He ght he might say, as far as the paper trade was concerned, they prepared to carry out any reasonable requirement. In answer to Smith the Chairman said the cost of providing the evaporating for a moderate sized mill would be from £1,000. to £3,000., he believed the income would pay interest on the capital outlay. committee shortly afterwards adjourned.

THE LABOUR COMMISSION.

THE CHEMICAL TRADE.

CTION C of the Labour Commission met again on Friday last week at Westminster, Mr. Mundella in the chair.

r. P. J. King, of St. Helens, representing the Chemical and Copper kers' Union of Great Britain and Ireland, said at present the opera- of the Union were chiefly confined to Lancashire. He could not what was the total number of men employed in the trade in the e kingdom, but there were from 8,000 to 10,000 employed in ashire alone. Most of these were members of the Union. He ibed the conditions under which men worked in the bleaching ler chambers. They had to wear muzzles or respirators, and these red the nose as well as the mouth, and if they inhaled any of the s through the nose the effect was very bad, and they had to lay up times for days. In addition to that they had to wear goggles to ct their eyes, and any part of the skin that was exposed was kept red with tallow. Even with all these protections they had to run nto the fresh air every half-hour, or even less. The gases had a us effect upon the men's appetites—they could not eat at all with- irst taking whiskey or rum as a stimulant. This applied to about er cent. of the men employed; but in other departments precau- of a less severe character had to be taken, and, generally speaking, as justified in saying that all work in the chemical trade was erous to health. He considered that chemical workers generally much worse health than the average, but he was not prepared to pecifically that men were killed by their employment. But in all hemical districts the people suffered greatly from bronchitis. The s of work formerly averaged 84 per week all the year round, and vages were from 30s. to 35s. a week, but they varied considerably. e were paid by time and some by piece. Since the formation of Union there had been some advances in wages. In some large s the hours of labour had been reduced. Messrs. Brunner, Mond Co. had adopted an eight hours a day system, working three shifts day. Formerly they worked in two shifts, each shift working ve hours a day. This firm had not found any dimuntion in amount of production per man by adopting the eight hours

The main purpose of the Union was to secure an eight s' day. There had been very few strikes since the Union established; advances in wages had been secured by friendly tiation, and the relations between employers and employed were satisfactory. There had been several advances in wages as the t of the efforts of the Union, but last year there were some reduc- in several of the chemical yards. The chief suggestions he wished ake to the Commission were that something should be done to ce the hours of labour to eight per day, and that there should be regulations as to protecting the health and comfort of the work-

In these respects he thought there should be legislative inter- ice, and if these matters were satisfactorily settled the question of s would regulate itself. No doubt they had obtained the eight s' day in several large firms by means of the Union, but these cases a very small proportion of the whole number of the employers, e did not think it would be possible to get a universal eight hours' n the trade except by Parliamentary enactment.

Mr. Austin: He was in favour of a law allowing any particular to decide by a majority to adopt the eight hours' day for that , and he would, in case any trade adopted the eight hours' day, by only a small majority, compel the minority to work no more eight hours He was not in favour of Parliament fixing the rate ges, because that was a matter that required technical knowledge ch trade, and each branch of the trade, and this knowledge Parlia- could not be expected to possess.

Mr. Tait: If a majority of the chemical trade in a particular ct were to be of opinion that an adoption of an eight hours day d injure the industry, he should not be prepared to enforce an hours day against the will of a majority. He was aware that tenths of the strikes during the last 20 years had been caused sputes as to wages.—Then, from the point of view of preventing es, is it not as necessary to have legislation on wages questions as ours of labour? I am not opposed to legislation as to wages on principle, but I believe the time has not yet come when Parliament could interfere with advantage in the regulation of wages.—In answer to further questions, the witness said he should like to have more efficient Government inspection of the chemical yards.

By Mr. Austin: There were numerous accidents in the chemical trade, and he considered that the machinery in the yards was not properly protected, and that something should be done to make the employers pay more regard to the safety of the men. He should like to see the Employers' Liability Acts made compulsory—that is, that the employers should not be allowed to contract themselves out of the Act.

By the Duke of Devonshire: He did not object to the employers insuring themselves under the Acts.

Mr. T. Ward, a director of the Salt Union, Limited, was the next witness. He said the Union had to deal with some 15 different trades, and at first the Union had to deal with these various bodies of men separately. But during the last 18 months a federation of the various trades had been effected, and now the Salt Union had to deal with a secretary representing the whole of the trades employed by the Salt Union. The result was, that in the case of a dispute with any one class of workmen, the federation representing all the other workpeople said, "If you don't agree with the one particular class of men, we will stop work until you do." This was a very important change, and made questions of wages, etc., of far greater importance. Men in almost every trade were employed, including saltmakers of all grades, carpenters, joiners, smiths, boilermakers, fitters, bricklayers, shipbuilders, etc., in fact, almost every trade, as the Union did the whole of its work itself. One important question was that of the relations between unionists and non-unionists. The Federation of which he had spoken had passed a resolution that unionists should not be allowed to work with non-unionists in certain departments of work. The result of this resolution was that the men had been compelled to join the union, often against their will. At first, the position of the Salt Union was one of perfect impartiality; they left the men to join the union or to refrain as they chose, but when they found that business was being interefered with, and that men who did not choose to join the union were prevented from working, the Salt Union considered that the unionists were going beyond their rights, and a protest was made. Generally speaking, the relations with the Federation were amicable, and so far they had managed to get along without strikes. Another question arose as to the discharge of some boatmen. In consequence of the falling off in trade, the Salt Union felt it necessary to reduce the number of boatmen, and the Federation attempted to compel the Salt Union to reduce the hours of labour instead, so as to keep the whole of the men employed. As they were working on a tidal river, it was impossible for the Union to regulate the hours of labour in the way the Federation demanded. The men gave in their notices, and the Union sought to settle the matter by friendly negotiation, and with a little trouble and by granting the men certain privileges, a strike was averted and an amicable settlement arrived at. Other differences had arisen from time to time with other classes of men, principally with reference to applications for advance of wages, but in all cases satisfactory terms had been arrived at without a strike. With reference to the suggestion of an eight hours day, it was utterly impossible that a universal eight hours day could be adopted in the work of the Salt Union. Some of the men, such as those employed in the mines, already worked less than eight hours, and some more. They had no Sunday work at all, either on the river or at the works. Occasionally a question of overtime arose, but these questions were always satisfactorily adjusted. There had been some little differences as to the hours of labour, but they had not been serious. As to the rate of wages, they were, for a salt boiler about 26s. a week, some of the men being paid by the day and some by the piece; for the carpenters, joiners, smiths, etc., the wages were 26s. to 28s. a week; the ordinary unskilled labourer had 18s. a week. The men were paid directly by the managers, and there was no system of sub-contracting. Since the Salt Union had been formed wages had generally advanced about 2s. a week.

By Mr. Livesey: He could not say that practically the whole of the men were unionists. Up to recently not one half belonged to the Federation, but now he had no doubt the larger proportion were members of the organisation. In the case of the boatmen, the men were obliged to join the Union, or they were not allowed to get a cargo.

Mr. Livesey: Practically, it was a case of joining the Federation or losing their work?—Witness: It came to that.

In answer to further questions, witness said that there was no Sunday work, the fires being banked up on Saturday night. The total number of men employed by the Salt Union was about 3,000. The Federation included other workers in the district besides those employed by the Salt Union, but of course the Union was by far the largest employer of labour in the district. The directors and managers had always approached the men in a friendly spirit, and he had always found that the men met them in an equally amicable manner.

By Mr. Austin: He had no objection to the men being organised, or to their being federated.

By the Duke of Devonshire: If the principle of federation were extended it was quite possible that the Salt Union might become involved in a dispute arising outside their own business entirely, but hitherto nothing of that kind had happened. It was difficult to say how these great dangers could be avoided. He thought a great deal depended on the way in which the employers and employed approached each other. So long as they stood aloof and discussed merely theoretical questions they were likely to have strikes and lock-outs, but he had always found that when the employers frankly met the men, told them plainly what they could not grant and in what direction they could make modifications with a view of meeting the men's wishes, they were able, without much difficulty, to come to an understanding.

The Committee again adjourned.

EGROT'S CONTINUOUS DISTILLATION APPARATUS FOR WINE.

(FROM THE FRENCH SECTION OF THE VIENNA AGRICULTURAL EXHIBITION.)

AS the consumption of brandy gradually becomes more general, and the idea that genuine good Cognac can only be made in France disappears, the distillation of wine becomes of ever increasing importance for the wine producing districts.

Although in certain cases the best and finest brandy can be produced with the simple distillation apparatus, and especially when fractional distillation is necessary, only such simple apparatus can be applied, yet with wines which yield a fine distillate of good taste at the first distillation, it is of great advantage to make use of continuous distilling apparatus.

This is also well adapted for use in the production of spirits of wine from wine, and of brandy from diseased wines, a crude spirit being produced by the first distillation, from which a good brandy can subsequently be obtained by fractional distillation.

Continuous apparatus of this nature are very superior to the simple distillation plant, and enable a considerable economy of time, work, and fuel to be effected, since they can be used without cessation for a long period, and the wine to be distilled is used for cooling the distillate, and is thus itself heated before its arrival in the retort. Such an apparatus is exhibited in the Agricultural Exhibition at Vienna by Messrs. Egrot, of Paris, and is represented in the accompanying wood cut.

The wine to be distilled is kept in a reservoir which is situated above the level of the distilling apparatus. It is first allowed to flow from the reservoir into a condenser. The wine here becomes hot, after which it passes to the distilling column, which contains a series of plates fitted internally with specially constructed tubes. In passing over these plates the wine is freed from alcohol and passes into a retort heated by a separate furnace and from which the wine is syphoned as soon as it collects. The non spirituous liquor arriving in the retort gives oft a vapour which rises into the internal pipes contained in the plates of the distilling column, thus affecting the distillation of the wine contained in the column. The alcohol vapour thus produced passes to a dephlegmator where the watery portions are condensed, and the portions rich in alcohol pass on into a condensing worm, where they condense and are collected. To completely exhaust a wine, one plate is required for for every 2% of alcohol in the wine. The distillate can be obtained of any strength from 65—85°, and by means of a rectifier to be placed on the dephlegmator, 90° can be reached. Once the process has been started, it is only necessary to see that a continuous supply of wine is kept up, and that a steady fire is maintained, in order to obtain a distillate of constant strength throughout a whole day without interuption. The apparatus is made of various sizes, capable of distilling from 400—100,000 litres of wine in the 24 hours.—*Land und Forstwirth Anst. Zeit.*

THE MIDDLEWICH SALT AND ALKALI COMPANY, LIMITED.

AT the London Bankruptcy Court, on Monday last, a sitting was held, before Mr. Registrar Hope, for the public inquiry into the promotion and business transactions of this Company, against which a winding-up order was made last September. The Company was formed in November, 1890, to acquire 23 acres of freehold land at Newton-by-Middlewich, with the salt deposits and other minerals underlying, and to erect thereon works for raising and manufacturing salt and alkali. The operations did not extend beyond the acquisition of the land and making a few experimental borings. The nominal capital was fixed at £100,000., but only about £18,000. were actually subscribed; and the failure was attributed to the directors having proceeded to allotment on an insufficient subscription. The accounts furnished under the proceedings show liabilities £13,374., assets valued at £6,19 deficiency of £57,046. to the contributories.

Mr. C. J. Stewart, official receiver, attended for the Board Mr. Vernon appeared for creditors and shareholders, and Mr. manufacturing chemist of Gomersall, attended as one of th shareholders.

The witnesses summoned included the Hon. W. W. D Stamford; Mr. E. L. Clarke, Northwich; Mr. Thomas Middlewich; Messrs. Harrison Ainsworth, Wickens, Kotch British Empire Corporation, London, and others.

Mr. Thomas Russell, of Middlewich, was the first witne There was no reply, and Mr. Stewart said he hardly expe witness to attend, the notices sent to him at Middlewich ha returned to the department.

The Registrar: Middlewich is rather a wide address.

Mr. Stewart explained that it was the only address he ha Russell, although that gentleman was responsible for the gu 8 per cent. to the shareholders as promised by the prospectus.

Mr. Wickens, the next witness, said he had been interes National Debenture and Assets Corporation and in the Britis Corporation, its successor. Those companies undertook the p of the Middlewich Salt and Alkali Company, Limited, a money for boring purposes upon the property. A contract wa into between Mr. E. L. Clarke, of Northwich, and a Mr. Russell, acting on behalf of a syndicate, for the purchas property. Witness was examined at great length as to his k of Mr. T. Russell, but stated that he knew very little of th man beyond having met him at a social club in the City. H stood that Russell was asked and consented to act as nomine British Empire Corporation. He denied that he had eve Russell's name to any document, but admitted that the cheq Northwich Salt Company for £6,000. and £4,000. made o Thomas Russell were passed through his (witness's) banking That was because at the time the British Empire Corporatio banking account. Witness took the cheques, and after pa expenses of the promotion handed the balance to the Britis Corporation. The purchase price to be paid by the Middle Company for the property was £60,000.—two-thirds in cash third in shares. Witness took no steps to satisfy himself a the boring experiments, but relied entirely upon the statemen Clarke and the report furnished by Mr. Timmins, the expert.

Mr. E. L. Clarke, the next witness, said he resided a few m Northwich and had known the property acquired by the Co his life. It had belonged to Mr. George Dean, an uncle to Witness bought the property in March, 1889, and immedia steps to ascertain if brine were to be found upon it. He Mr. Timmins, sen., to survey and report upon the propert view of taking it to London and selling to the Salt Uni Timmins, sen., died just about the time that brine was found report was afterwards supplied by his son, Mr. Arthur Witness saw the National Debenture and Assets Corporati undertook to purchase the property and form a company, an advanced money to witness for boring purposes. Several hu pounds were expended in sinking a shaft and erecting a pum works. Witness bought the property for £4,750., and sold Thomas Russell on behalf of the British Empire Corpor £20,000., the British Empire Corporation in turn selling Middlewich Salt Company for £60,000. He had previously Northwich Salt Company's property to the British Empire Co and was introduced to that Corporation by Mr. Gilmo Liverpool representative.

Mr. Clarke was next examined with respect to his knowled Thomas Russell. He said that although he knew Middlewic knew no one there answering to that name. It was true tha the contract for the sale of the property at the same time th signed by Mr. Russell, but he was unable to remember anythi gentleman's appearance. Witness had only attended one m the Board in London, and then only did so on the understan he should be allowed his expenses. He saw the draft prospe noticed the paragraph whereby the vendor guaranteed a divi per cent. for the first year and 12 per cent. per annum afterwa the shares, but he took no steps to ascertain the value of such g and, in fact, knew nothing whatever of Mr. Russell's financial Whilst in treaty with the British Empire Corporation witness an independent offer of £10,000. cash for the property, but he that offer because of the negotiations pending with the Britis Corporation. When Mr. Timmins was preparing the report u property for witness he was accompanied by a Mr. Taylor. T of the latter gentleman was incorporated in the prospectus, alth had not been instructed by witness to assist with the report. M subsequently complained to witness of the use of the na although disclaiming all responsibility and onus witness offere him some shares as a solatium, but high words followed, and thereupon refused to make any recompense to Mr. Taylor.

nt at the meeting at Northwich for the final settlement of the but could not recollect whether or not Mr. Russell was He then agreed to reduce the purchase price from £20,000. 0., and to take £5,000. in cash, £2,000. in debentures, and n shares. Under the winding-up proceedings the property by the Middlewich Salt and Alkali Company for £60,000. sold for £1,525.

ied by Mr. Vernon, witness said he had not been a director of any, nor had he ever received fees as a director. He was a of the Northwich Salt Company, and had given his word of the shareholders of that Company that he would not sit at the an opposition company. Asked whether he would swear that t offer Mr. Taylor £500. to refrain from writing to the papers the report and the prospectus, witness replied that he would r to anything. He had had some experience in brine . The tube used for the boring experiment had in. bore. Personally speaking, witness would not a brine well, and as it was so described in t he could not agree with the document. A steam pump erected on the works, but it also could be worked by hand, t was usually so worked, the idea being to test the brine and ain quantity. There was a great pressure, and the rise of the found to be quite 130 feet. It was not a fact that he had to the pump to obtain samples of brine, and they had o him unable to procure any. The samples obtained were 2lb. 8oz. of brine to the gallon, whereas a profit could upon 2 lb. to the gallon. He was of opinion that six llons could be pumped weekly, and that the prospectus was ding in stating that 300 tons of alkali could be produced As a fact, with adequate machinery, double that amount produced. The price paid for the land by the Company was ive, seeing that the Salt Union had paid £8,000. an acre for he neighbourhood, and that in one instance no less than per acre had been obtained.

Crowther: The brine bore was not cased throughout, but as a good flow very little water penetrated. The proper f the brine could always be ascertained from the bottom of ings. Witness could only guess from which side of the pro- brine came. but he thought it flowed towards the sea. He r the impression that brine was discovered on the Middle- Company's before the adjoining properties, and he certainly st to bore down to the rock salt in Middlewich.

n. W. W. Dundas was examined, and stated that although is chairman, he took no trouble to go into the contracts or s, nor did he take steps to ascertain the accuracy of the in the prospectus. He resigned the post, having heard t rumours as to the promoters' connection with the Bread He had belonged to no other company.

t witness called was Mr. Clovis, who said his correct title e Lucien Clovis Bonaparte. He had acted as director, and l that no shares were required for quailfying shares. He held hares, for which he only paid a few pounds for the stamps ransfer.

swart: The stamp is 6d. (Laughter.) Then you really paid

admitted that to be a fact, and that the shares formerly o the promoters of the Company.

atson, solicitor to the Company, said he prepared the con- ie sale of the property, but had nothing to do with the pros- r did he prepare the articles of association. He had never Russell, the nominee of the Company.

ompson, the next witness, stated he succeeded Mr. Watson r to the Company. He had never had his attention called to in the newspapers to the effect that the Company was a It was not true that when £5,000. part purchase money was hareholders had refused to pay their calls.

ally the examination was adjourned to enable the Official o try and obtain the attendance of Mr. Russell.

DED MATTERS IN WORKS EFFLUENTS.—Several cor- ts have severely criticised the concluding sentence of our last der. They think we are not warranted in assuming that a at liberty to convert the whole of his solid refuse into "sus- atters" in order to get rid of them by running them into a ater-course. Much depends upon the decision of "a Court y jurisdiction" as to what suspended matters actually are— matters in suspension in water" we have ever seen have posited if only sufficient time has been given them to settle; are actually, at the time of entry into a river, "particles of suspension in water," we do not see how the court can refuse tion. In sewage, it is the "particles of matter in suspension that give us the foul putrefying mud, and yet this is to be t least, so the Bill proposes.

THE VOLUMETRIC ESTIMATION OF SULPHURIC ACID.

By Dr. K. Farnsteiner.

In the volumetric estimation of sulphuric acid by the chromate method, the sulphuric acid is precipitated by a measured volume of barium chloride solution of known strength, so that barium chloride remains in excess. This excess is determined either by adding a standard solution of neutral potassium chromate, until the liquid takes a yellow colour, or by adding an excess of chromate and determining this by some reduction method. For this last purpose, ferrous sulphate has been proposed, the end of the reaction being found by testing a drop of the liquid with ferricyanide of potassium.

With the hope of replacing this unsatisfactory method of testing drops of the solution, I employed for determining the excess of chromate the process described by Volhard for the standardization of iodine solutions by means of potassium bichromate. According to this, potassium iodide was added to the chromate solution, the liquid made strongly acid with hydrochloric acid, and the liberated iodine estimated by sodium thiosulphate employed with starch as indicator.

Modified in this way the determination of sulphuric acid is carried out as follows:—The liquid is heated nearly to boiling and made slightly acid with hydrochloric acid; an excess of a standard solution of barium chloride is then added, the liquid again heated for some time, after which ammonia, free from carbonate, is added, until the reaction is faintly alkaline, and then an excess of a standard solution of potassium chromate. After cooling, the liquid and precipitate are brought into a graduated flask, made up to the mark with water, well shaken and half the liquid filtered off. The clear filtrate is treated in a beaker, or better in a wide necked stoppered bottle, with potassium iodide and hydrochloric acid and the liberated iodine, after a few minutes titrated with sodium thiosulphate For the calculation the strength of the barium chloride solution must be accurately known, and also the relation of the chromate solution to the barium chloride and the sodium thiosulphate solutions. These relations are determined by titrating the iodine liberated by a measured volume of the chromate solution and by precipitating a measured volume of barium chloride solution with excess of potassium chromate solution, and then proceeding as described above. From the numbers thus found the equivalent of 1 c.c. of each solution in SO_3 is calculated.

The solutions employed for the determinations given below were of the following strengths:—

1 c.c. Barium chloride = 0·0040 gm. SO_3
1 c.c. Chromate = 0·00491 —
1 c.c. Thiosulphate = 0·00390 —

To test the method, pure anhydrous sodium and potassium sulphates were employed; to precipitate the sulphate in 50 c.c. of liquid, 50 c.cs. of barium chloride solution were generally employed; 10-15 c.c. of chromate solution being then required.

The following results were obtained:—

		% Found.	% Calc'td.
0·3183 gm. Na_2SO_4	0·1766 SO_3	55·48	56·31
0·3477	0 1930	55·51	
0·2492	0·1385	55·58	
0.3361	0·1860	55·34	
0·3897 ,, K_2SO_4	0·1758	45·11	45·91
0·3897	0·1747	44·83	

A closer examination of the possible sources of error showed that the considerable loss was occasioned by the power possessed by sulphate of barium in the freshly precipitated form of retaining potassium chromate mechanically. This fact could be directly determined. About 0·5 gm. barium chloride dissolved in 50 c.c. water was completely precipitated by a solution of sodium sulphate, then 10 c.cs. of potassium chromate, corresponding to 12·6 c.c. of thiosulphate added and the solution after cooling made up to 100 c.c. Fifty c.c. of the filtrate did not correspond to 6·3 c.c. of thiosulphate, but according to three experiments, 5·7, 5·8 and 5·75 c.c. The difference corresponds to a loss of 0·87 c.c. chromate solution or 4·3 milligrammes of SO_3.

The application of ammonium chromate instead of potassium chromate gave somewhat better results. The loss of chromate in an experiment similar to the one described above corresponded to only about 1·9 mg. SO_3. A determination of sulphuric acid in 0·3057 gms. K_2SO_4 gave 45·31 instead of 45·91% SO_3; the loss amounted to 1·8 mg. SO_3. Whether barium chromate also retains potassium chromate has not been directly determined, it was however calculated from two comparisons of the thiosulphate with twice sublimed iodine and from the relation of this solution to the chromate solution, that 16·26 c.c. of the latter should correspond to 20 c.c. of barium chloride solution instead of 16·30 as found by a direct determination.

On this account the method cannot be used for determining large amounts of sulphuric acid; the disturbing influence of the barium sulphate seems however to be negligable in dilute solutions. The following results show this clearly (potassium chromate being used):

In 0·0744 gm.	K_2SO_4	0·0340	g. SO_3	calc'td.	0·0342
0·0886 ,,	,,	0·0407	,,	,,	0·0407
0·0426		0·0198	,,	,,	0·0196

These amounts of sulphate were dissolved in about 100 c.c. of water, so that the concentration of the solutions was $\frac{1}{5}$-$\frac{1}{10}$ of that in the determinations cited above. The method can therefore be thoroughly recommended for the determination of small amounts of sulphuric acid, especially when ammonium chromate is used. Important cases to which it can be applied are the determination of sulphuric acid in soda, rock salt, potashes and potassium chloride.

The following process has proved convenient for the volumetric determination of sulphuric acid in natural waters. 100-200 c.c. of the water are heated with a little dilute hydrochloric acid to decompose the carbonates and the sulphuric acid precipitated with chloride of barium. The liquid is then made faintly alkaline by the addition of ammonia, the chromate solution immediately added, and then the process completed as usual. The Hamburg town's water was found to contain 0·0079 gm. SO_3 per 200 c.c. gravimetrically, and 0·0077 volumetrically.

The only substances which can interfere with this determination are ferric oxide and nitrous acid; nitric acid in ordinary amounts is without influence. Ferric oxide is, of course, removed by the addition of ammonia; nitrous acid can be destroyed by the addition of pure urea. A few crystals of the latter are added to the acidified and heated water. The excess of urea is without influence on the determination.

A determination can be carried out in about one hour.—*Chem. Zeit.*

THE CHEMICAL ANALYSIS OF ALUMINIUM.

By Alfred E. Hunt, Geo. H. Clapp, and James O. Handy.

THE principal impurities found by us in commercial aluminium have been silicon, iron, and copper.

The present system of valuation of aluminium is based, chiefly, on the *total percentage* of *impurities*, but account is also taken of their *nature* and *relative amounts*.

SOLUBILITY OF ALUMINIUM.

Hydrochloric acid (sp. gr. 1·2) dissolves aluminium, in the form of drillings or chips, with very great rapidity. Sudden foaming up takes place, and much heat is produced. As this foaming often causes overflow, it is desirable to use a more dilute acid for analytical work. A mixture of 35 per cent. hydrochloric acid (sp. gr. 1·42) and 65 per cent. of water is better suited for general work.

Nitric acid (sp. gr. 1·42) when cold, appears to have no action on aluminium. In boiling acid, however, the metal is very slowly dissolved.

Nitric acid (sp. gr. 1·2), similarly has little or no action when cold. At the boiling point, it dissolves aluminium slowly.

Sulphuric acid (sp. gr. 1·84), acting on aluminium in the cold, soon forms on its surface a coating of sulphate, which protects the remaining metal. When heated, concentrated sulphuric acid dissolves aluminium slowly.

Dilute sulphuric acid, containing 25 to 50 per cent. of concentrated acid, dissolves aluminium in the cold, but only after a long time. Heating hastens the solution to such an extent that we have hopes of using this method of attack in determining iron hereafter.

Aqua regia, even that which contains only one-sixth as much hydrochloric acid as nitric acid, and a volume of water equal to that of the mixed acids, dissolves aluminium *almost completely* without warming, and *fully* when heat is applied.

Potassium hydrate solutions of various strengths dissolve aluminium readily.

F. Regelsberger (*Zeit. für angewandte Chemie*, June, 1861) uses potassium hydrate, usually in 40 per cent. solution, as a solvent in the processes by which he analyzes aluminium. 1 gm of aluminium requires for solution about 15 c.c. of the 40 per cent. KOH.

We do not favour this solvent for general work. Its use prolongs the analysis, and renders close attention a necessity. The fatal objection, however, to its use in a laboratory, where large numbers of aluminium analyses are to be made is its expense. It would cost three times as much as the acid processes which we employ.

DETERMINATION OF TOTAL SILICON.

0·9334 gm. of thin turnings or drillings are placed in a 4-inch evaporating dish. 15 c.c. of nitric acid (sp. gr. 1·2) and 2 c.c. of concentrated hydrochloric acid are added and mixed, and the dish covered with a glass.

Solution takes place with evolution of NO_2 (hyponitric) fumes, showing that the conditions favour oxidation of combined silicon. In a few minutes, when action has nearly ceased, about 2 c.c. more of concentrated hydrochloric acid are added. This completes the decomposition of all except the very pure grades of aluminium. These require warming with the acid mixture for a time.

After the aluminium has dissolved, 20 c.c. of concentrated sul acid are stirred in and the mixture evaporated quickly, on a hot till it gives off fumes of sulphuric anhydride. The dish is removed the aluminium sulphate separates and spirts.

After allowing it to cool for a few minutes, 75 c.c. of wat 10 c.c. of hydrochloric acid are added to the contents of the dis the whole well stirred. After boiling up for about five minutes off the mixture of silicon and silica and wash with water, next wi hydrochloric (30 per cent.) acid, and finally with water till fre acid.

The filter paper is then burned off and the residue fused with 3 gms. of sodium carbonate or fusion mixture. Cool the crucibl taining the fusion by placing it in 25 c.c. of water in a evaporating dish. Cover the dish, and add sufficient concen hydrochloric acid to decompose the fusion; when effervescence c rub, and wash silica off from surfaces of crucible and cover, and r the latter from the dish.

And 15 c.c. concentrated sulphuric acid, and boil down the m to sulphuric fumes, on the hot plate.

After cooling sufficiently, add 75 c.c. of water and 10 c.c. c centrated hydrochloric acid, boil up and filter. Wash thoroughl water, 30 per cent. hydrochloric acid, and finally water. Bu and weigh silica. As 0·9334 gms. of aluminium were taken for an the weight of silica in grams less the silica obtained from the mixture divided by ·02 equals per cent. of silicon (total). W many times treated with HF silica thus obtained and have found it pure.

Our reasons for using sulphuric acid to dehydrate the silica rapid action compared with evaporation to dryness, and its leavi silica in a form which filters easily. Evaporation of hydrochlor nitric acid solutions to dryness fails to fulfil these requirements.

(To be continued.)

ST. HELENS GAS.

A MEETING of the Gas and Lighting Committee was held 10th February, Alderman Cook in the chair. The mar report was read, showing that during the past month 28,859,100 feet of gas had been produced at the works, of an average illumi power, ascertained by 25 tests, to be equal to 18·94 sperm c Corresponding month last year, 28,041,700 cubic feet o of an average illuminating power, ascertained by 26 to be equal to 18·25 sperm candles. Resolved that an tional photometer for the testing of the illuminating pow the gas be purchased and erected in some suitable place i Town Hall, the necessary arrangements for such erection a the taking of tests to be left in the hands of the chairman, manager reported that, in his opinion, in order to provide f increasing supply of gas, an extension of the retort house would s be required. Resolved that the question be referred to the sub mittee already appointed with regard to the illuminating power gas, and that the manager be, and he is hereby, directed to pr under the instructions of such sub-committee, an exhaustive upon the matter.

THE TESTING OF GAS.

At the last meeting of the Council Mr. Alderman Cook mov confirmation of the minutes of the Gas and Lighting Committee. Council, he said, will observe a resolution here recommending photometer for the testing of gas be placed somewhere in this b for the purpose of having entirely independent tests taken from that are published in the minutes from month to month. The of this is that tests may be taken by some person not connecte the gasworks We have from time to time been discredited w reports that are made in the minutes, and so far as the Commit concerned, we believe them to be absolutely correct and *bond fi* in the interests of the public and to satisfy the public suspicio recommend that a separate testing photometer be placed in this ing, and that the testing be done from time by some other indep person. By that means they will be able to check the illumi power as against what we do, and what we publish from time t in these minutes. The cost of the apparatus is about £84, an there will be some connections to make, so that it will probab £100 altogether. In the public interest we recommend that t done.

Alderman McKechnie—I second it.

Mr. Martin—I should like to remind the chairman of the Gas mittee, with reference to the matter he has called the attentio Council to, that the resolution says the photometers shall be ere some suitable place in the Town Hall, I should like to rem chairman that there is a Town Hall Committee.

Alderman Cook—I grant that. I should not come into this h and take possession of this place without consulting the Tow

ee. It is simply an arrangement; we have not thought of any place. It is subject to arrangement, and it is in my hands to h arrangements.

nan D. Gamble—I wish to ask whether I am right in supposhis photometer is to be fixed here for the purpose of enabling to come and test the gas. If that is the purpose of it it is a antage to the ratepayers and would satisfy them.

nan Cook—I don't think that is exactly so. The testing of gas ical matter, and would have to be done by some person who some technical knowledge as to how to go about it. Any gas could not go and do it himself, whatever facilities he might occurred to our mind that possibly we might have some onnected with this building who would be quite competent, w lessons, to test the gas, and test it from time to time, and in the minutes, independent of our tests, what the testing is. ht to be sufficient assurance to the public. We have been dis- they say we are the manufacturers of the gas, and we are to make the tests appear to be right. I say, so far as we ey are *bonâ fide* tests; it is done *bonâ fide*, and they are ut to satisfy the wishes of the public, and to allay suspicion, uite willing this should be done.

nan D. Gamble—I don't think it would be the slightest satisthe public. The sellers of gas are the Corporation, and they t give tests, which they consider to be right, stating the gas cording to the tests given, of a certain quality. Now the Cor- are still the sellers, and I don't think any servant of the ion, though he may have his office in the Town Hall instead of s works, will be likely to satisfy the public in the same way pendent analysis would do. I hope the committee will see to allow the testing to be done by some one who thinks himieved.

nan Cook—We are quite wishful it should be done to satisfy nable request, but it is quite obvious that every consumer who elf aggrieved could not come and test the gas himself. There some person we should call in, and ask to test it; but if he o be present to see it tested, there is no objection. This instru- very delicate thing, and requires to be handled very delicately. e peculiar things about it, so that any ordinary person could t. They would have to have a considerable amount of trainuite agree it would be better to have a separate and independr, some person above suspicion, who has no connection with oration. As to every consumer coming to test the gas himself, together out of the question, and could not be done.

ote—Will any fee be charged for testing the gas?

nan Cook—I should think not.

rchall—Have you got a machine of this sort at the gas works

nan Cook—Yes, certainly.

rchall—Then why cannot you go down to the gasworks and e?

nan D. Gamble—The consumers wish to have some independ- because the committee tell us there is such a percentage of ing power every month, and the only thing that can possibly ed by the public is a correction of this testing. Probably it is ut, at the same time, it is done under a certain amount of on by the gas manager, who is responsible for the quality of the you can quite understand that a test should be made by some ho is not responsible for the quality. The manager of the gasresponsible for the quality and the testing is done under his We don't know how that apparatus is managed, and we don't w it may be tampered with. We know it has not to be lower rtain average, and if you saw it was two candles less there a row. I wish the committee to arrange for some way of so as to satisfy the public.

nan Cook—At present we have independent tests taken once a We did think of having it done once a month, but the fee r high. A gentleman from Wigan, who is a professional man, ver and does it. There is a little suspicion in that. The y they know at the gas works when he is coming, and they gas to suit. That is not so. We have no knowledge whatn he comes, and he never gives us the slightest notice. He d goes into the place and takes his test without our having any at all upon him, but in order that it shall satisfy the public mend this. We are quite willing that it shall be done. If nning we should be glad to know. At present we believe it is *a fide* and correctly, but we are quite willing that it should be

inutes were confirmed.

T TRADE MARK.—"Tontine" Soap: for perfumery and icles. By David Thom & Co., Whit Lane Works, Pendleton. ntial particular is the word "Tontine," the exclusive use of atter being disclaimed. 161,657.

Legal Intelligence.

MANCHESTER ASSIZES.

NISI PRIUS COURT.

(Before Lord Chief Justice Coleridge and a Special Jury.)

BOSTOCK *v.* KNOWLES AND CO.

THIS case came on for hearing last Tuesday.—Mr. Wharton appeared for the plaintiff, Mr. A. L. Bostock, sewing cotton manufacturer, Whitworth-street, Manchester, and Mr. Bigham, Q.C., and Mr. Yates for the defendants, who are bleachers at Tottington.

The plaintiff alleged that from 1884 to 1889 he sent quantities of yarn to the defendants to be bleached, and that the defendants from time to time retained part of the yarn, selling it for their own behoof. Mr. James Robinson, who had been an overlooker of makers-up in the employment of the defendants, but now out of employment, was the first of two witnesses called to support the plaintiff's case. Mr. Robinson said that if any hank of good yarn ever got into the waste heap it was by accident. A certain amount of waste was inevitable. No broken or dirty yarn was ever returned to the manufacturer—unless it happened to be for the foreign market.—Mr. John Nuttall, fent dealer, said he bought waste yarn from the defendants. He understood that he received the whole of their waste. He had from them about £25. worth a year.

Mr. Wharton at this stage asked his Lordship to adjourn the case in order that the plaintiff might have an opportunity of examining the defendants' books.

The judge said he thought there was no case for adjournment.

The defendant, Mr. Knowles, had been subpœnaed as a witness for the plaintiff, but did not appear, Mr. Bigham stating that he was ill.

Mr. Wharton intimated that he could not carry his case further, and and asked for a non-suit.

Mr. Bigham said on behalf of his clients that they had carried on business for a considerable number of years, and bleached yarn for a very large number of firms. During the years Mr. Bostock was sending yarn to be bleached Messrs. Knowles bleached about four million pounds of yarn altogether, and disposed of waste amounting in value to £257. The proportion of waste which the plaintiff's yarn would yield for the whole of the years in question was £37. worth. He was instructed that it was the invariable practice of yarn bleachers to keep and sell the yarn thrown out as spoiled.

The Judge said he would give judgment for the defendant with costs. A plaintiff who made such charges must come to court thoroughly prepared to support them.

Correspondence.

*** *We do not hold ourselves responsible for the opinions expressed by our correspondents.*

ANSWERS TO CORRESPONDENTS.

H. R. AND CO.—Longmans, Green and Co., we should think about the best.

C. H.—Salt, we believe is to be one of the chief products; we are not yet aware of the name.

W. H. C.—They have been sent you by post.

R. C.—(1) Certainly. (2) It is a question of time. The past has shown pretty clearly that there is a stong feeling of opposition.

AQUA.—You will see the account in this issue. There are many who use an apparatus of the description referred to, but there is much opportunity for their extended use.

R. AND SON.—Any good directory will afford you all the information you seek.

THE INSTITUTE OF CHEMISTRY.

To the Editor of the Chemical Trade Journal.

SIR,—One would have thought the late Secretary and Registrar of the Institute of Chemistry, would have become tired of issuing circulars and the like, especially as his penultimate effort in that line can scarcely be termed a success, but what has actually happened serves to show how erroneous a hypothesis, even apparently eminently reasonable, may be. So far from being content to enjoy a retirement, which, I feel sure no one will grudge him, Mr. Groves has sent out a printed document in which he impugns the accuracy of the reprinted report of the Annual General Meeting of the Institute of Chemistry, that appeared in your columns and was reprinted therefrom, on the ground that he did not canvass on behalf of the official candidates. Unfortunately for this contention, the letter which betrayed the nature of the manœuvres which Mr. Groves thought fit to use in the late election, is still in ex-

istence, and would doubtless be forthcoming should occasion arise. In view of this fact, a policy of discreet silence has much to recommend it, and I regret that for his own sake Mr. Groves has not considered it worthy of adoption. Since, however, such is actually the case, I must reply to his assertions by stating that the report is an accurate *précis* of what took place at the meeting, and does not pretend to follow all the psychological windings of Mr. Groves, through the subtle distinctions which he now attempts to draw between various means of influencing votes. The plain fact remains that he committed an act, which most people possessed of even elementary notions of the ordinary amenities of professional life would have hesitated to perform. With the memory of the whole transaction fresh in our minds, it is not a little edifying to find Mr. Groves in the last paragraph of his latest pronouncement, condescendingly exonerating Mr. Hehner and Mr. W. Thompson from the responsibility of having written the report in the *Chemical Trade Journal*, which appears to have incurred his disapproval. It is fit matter for speculation how these gentlemen relish the patronage bestowed upon them.

Yours, etc.,

The Writer of the Report.

Our Book Shelf.

Outlines of Theoretical Chemistry. By Lothar Meyer. Translated by P. P. Bedson, D.Sc. and W. C. Williams, B.Sc.; 216 p.p., index. London:—Longmans, Green and Co, 1892.

This work, although in a sense covering the ground already traversed by Ostwald and Remsen, cannot be deemed unnecessary since the object with which the book has been written is entirely different from that professed by the two previously mentioned authors. Apart from the student of theoretical chemistry, there exists a large class consisting chiefly of those who, though interested in the advance of scientific investigation, have no time to devote to the consideration of the details of the investigations themselves. It is therefore more particularly for this class that this work is intended, that those interested may keep in touch with such matters, by acquainting themselves with the conclusions which have been arrived at by the aid of modern investigation.

The work, which is well printed and nicely got up, is not separated into chapters, but merely divided into sections, which are numbered; a full index satisfying the requirements of those who use the book for reference purposes; the first few sections of the book are devoted to what might be called the philosophical aspect of the work, including the development of chemical theories and the atomic hypothesis.

The atomic weights, their determination by various methods, then follow, after which the influence of heat and electricity is discussed, leading up to the relations of atomic weights to vapour density.

Gases, their molecular constitution and weights according to the hypothesis of Avogadro, come next in order. The section devoted to the properties of gases in the nascent state is interesting though short. Chemical valency, the linking of atoms by means of physical, analytical and synthetical agencies, and isomerism are the chief points which are treated next.

Solids, their melting points, physical and molecular characteristics, are all discussed in turn. Solution is a subject which alone would demand for itself as much space as the whole work occupies; but though necessarily much condensed, the most important and conclusive phenomena have been given due prominence.

Critical temperatures, the bearing of which, upon the liquefaction of gases, has enabled so many interesting experiments to be successfully carried out during the last few months, will be found a most interesting section.

The constitution of gases, in which section an attempt is made to give an approximate idea of the actual size of the molecules themselves, and the area of the space in which they move, is, perhaps, one of the most fascinating sections in the whole work; the statements made being such that they cannot fail to impress those who are inclined to cavil at the slow but steady advances of science, of the difficulties which surround many of the points which our present knowledge has demonstrated, if not yet fully explained.

The avidity of acids, and the relation between their avidity and their composition, touches upon a most important point, showing the emptyness of the term strong acid. At the end of the book is a table to illustrate the natural arrangements of the elements. Bearing in mind the original object of the work, it satisfactorily fulfils its aim: giving, in a small space, the pith of subjects which have been fully discussed n larger works, affording a complete and useful summary of the outcomes of chemical investigation during the last few years.

The Book of Prescriptions. By Henry Beasley. Seventh edition. 599 pp. London: J. and A. Churchill, 1892.

This book is got up in a convenient size; suitable for the pc desk, and consists of a compendium of English and foreign including about 3,000 prescriptions collected from and up authority of most of the eminent physicians and surgeons. nomenclature of the work has been revised in accordance w modern views of chemical constitution, and many antiquated r have been eliminated and fresh ones supplanted

A list of the abreviations used are first given, followed by a list of the more unconventional Latin words and phrases met prescriptions. The various drugs, &c., are taken in alphabetica A short account of the source and properties of the same follow which various prescriptions are given, the disease for which t specially intended being specified, along with the name of t scriber. Many familiar names constantly occur, the prescripti lady doctor finding place among others. A list of the percent alcohol in wine, beer, and spirits is also given. At the end of th will be found an index of diseases and remedies; a most useful a to the memory in cases of emergency. The neatness and hand the book are strong recommendations to its universal use (w ought to enjoy), by all those requiring a book of this kind.

A Short Text Book of Inorganic Chemistry. By J Kolbe. Translated and Edited by T. S. Humpidge, 3rd Edition. Revised by H. L. Snape, Ph.D. 571 wood cuts, Appendix and Notes. London: Longmans, and Co. 1892.

This book, which has now reached its third English edition, known as a work of reference for students and teachers. Its ch is to give a concordant narrative with which the student may a and revivify the facts he learns by attending a course of lectures present edition has been carefully revised, more especially the c on water, air, coal, and iron. A short description of the mani of coal gas is also given. In the notes given at the end of th much further information is given, and which in places wa needed. There is a lack of the practical element about the The manufacture and rectification of sulphuric acid is describe usual broad and almost, at times, indefinite style so frequent books.

The arrangement of the work is good, more especially in the As a text book the work has much to commend it, and has been improved as regards its general utility by means of the note are copiously scattered through the text. Ozone is a good chap much more explicit than is usually the case in works of this class and manganese, under the metals, are both interesting chapters a very scanty nature.

The appendix at the end of the book is a most important a touching more particularly on the Periodic Law. Some usefu will be found at the end of the work, including one giving the of heat evolved or absorbed during the formation or solution principal compounds. A coloured plate of the spectra is giver frontispiece.

Trade Notes.

Discovery of Calcium Tungstate.—A discovery of e importance has recently been made by Mr. W. F. Ferrier, B the Canadian Geological Survey. The specimens were procur an opening made for gold on a quartz vein in the township of Beauce County, Province of Quebec, near the State of Maine b line. They are found to hold scheelite or calcium tungsta yellowish-white colour, resembling blende so much as to be n for the latter.

The British Association.—The arrangements for the 62nd meeting of this association are now completed. The first gener ing will be held on Wednesday, August 3rd, at Edinburg Archibald Geikie, Director General of the Geological Surve United Kingdom, is the president-elect. The programme, in to the usual arrangements in regard to excursions and reading munications, includes two soirees, a lecture by Prof. A. Marshall, D.Sc, F.R.S., and a lecture on magnetic induc Prof. Ewing.

Personal.—Professor H. B. Dixon read a paper before th chester Literary and Philosophical Society on Tuesday last, on explosion of carbonic oxide and oxygen with other gases," rela experiments by Professor Bekstoff, of St. Petersburg, confirm results arrived at by Mr. Dixon, which go to prove that the mi gases dried by phosphoric acid does not explode. Bekstoff fou cyanogen confers inflammability on the mixture. This had be viously recorded by Mr. Dixon, who also found that carbon bis and oxygen could be fired in a mixture of carbonic oxide and without causing the union of more than 10 per cent. of the latte

ITED ALKALI COMPANY, LIMITED.—The first annual meeting of mpany was held at Liverpool, on Thursday afternoon, Sir Charles nt, the president, in the chair, and there was a very crowded ance.—Mr. John Brocky, the chairman of the directors, in g the adoption of the report, said the different works were now all ht into line, and during the year they had acquired two import- orks at St. Helens. There was a gross profit shown of £781,000 preliminary expenses had been paid off, and the net profit was 456., and after payment of interest, there was a balance of 870., out of which it was proposed to pay dividends of 7s. per on preference shares and 5s. on ordinary shares, and to carry to serve fund £190,000. The opening year was full of promise, and arge sales had already been made of the leading articles manu- ed at full prices, and the works were producing much more dy than at first.—The report was adopted and the dividend ed.

PORTS AND IMPORTS FOR FEBRUARY.—The following is a com- n of the exports and imports of various articles during the past with the same month last year :—

IMPORTS OF FOREIGN AND COLONIAL MERCHANDISE.

Articles.		Quantities.	
		1891	1892
rine	cwts.	100,190	124,693
r Ore and Regulus	tons	16,375	13,981
, dry and wet	cwts.	81,279	65,678
	tons	19,947	25,688
e of Soda	cwts.	195,455	159,872
and Stearine	,,	55,491	101,495

EXPORTS OF BRITISH AND IRISH MANUFACTURES.

Articles.		Quantities.	
		1891	1892
	cwts.	514,469	420,176
nt	tons	44,544	39,780
r, all kinds	cwts.	107,641	141,332
nd Steel	tons	218,581	184,310
Yarn	lbs.	2,880,100	2,139,000
ical Manures	tons	24,306	27,620
Seed	,,	5,655	6,435
	,,	41,260	37,047

SALFORD GAS.

illuminating power is expressed in standard candles ; the nia and total sulphur in grains per 100 cubic feet. The car- acid is calculated to volumes per cent. The determinations have n made on the gas supply to the Manchester Technical Labora- 32, Blackfriars-street.

Date. 1892.	Illuminating power.	Ammonia.	Total sulphur.	Carbonic acid.
Mar. 17	15·5	0·03	15·86	0·53
,, 18	16·8	0·04	18·38	0·50
,, 19	16·5	Nil.	31·60	0·46
,, 21	14·5	0·08	22·91	0·66
,, 22	14·5	0·11	25·41	0·78
,, 23	14·2	0·08	23·78	0·77

Market Reports.

TAR AND AMMONIA PRODUCTS.

zol is going from bad to worse ; as it was foreseen the large ction on the Continent is making itself felt at last. 90% can be t at 2s., and 50/90's at 1s. 7d., or even perhaps 1s. 6d. ; but even s price buyers will not be tempted. Anthracene remains in a nt condition, the nominal quotations being 1s. for 30% A, and 8½d. for 30% B. Pitch still remains firm.

new feature has turned up in the sulphate of ammonia market, therefore remains unchanged, while prices are perfectly steady. y's prices may be quoted as £10. 5s. Hull, £10. 3s. 9d. to 5s. Leith, and £10. 2s. 6d. Liverpool, and it is a pleasant fact to hat the quantity offering is but limited. The weather is now ng, and probably orders will become more frequent, though it is that the consumption of manures this spring will fall considerably of anticipations. In consequence of this speculators are a little active, and they seem willing to accept orders even up to mber at about the present level of prices. Beckton prices stand y at £10. 1s. 3d., while the value of outside London makes is 5s.

LIVERPOOL OIL AND COLOUR MARKET.

LIVERPOOL, WEDNESDAY.

OILS.—There is practically no change in the state of palm oil, business has been limited, and the market is quiet but steady. Lagos £21. 15s., Accra £20. 5s. both transist ; Bonny and Old Cala- bar £20. 15s. at Quay. Olive has not improved and the recent decline prevails ; the market is stagnant with values unaltered. Lin- seed has been fairly steady at 19s. 6d. to 20s. 6d. per cwt. in export casks, having been in moderate request. It is somewhat quieter to-day. Cotton seed, Liverpool refined, remains firm, being quoted 19s. 6d. American rose to 20s. 3d during the week, but has again changed in buyers' favour to 20s. per cwt. with the market steady thereat. Castor oil is not so firm as early in the week ; but lowest quotation for good seconds Calcutta is 2¾d. and first pressure French 2⅞ per lb., remaining steady thereat. Tallow hardened about the middle of the week, the tendency has not been maintained, however ; prices are the same as last week and the demand slow. Rosin—common, continues steady, there having been fairly extensive sales at 4s. 3d. per cwt., and some sales ex-store at 4s. 4½d. per cwt. Spirits of turpentine con- tinue firm with a moderate business doing, prices varying from 27s. to 27s. 3d. ; to-day's tendency being towards the higher figure. American petroleum and Russian refined unaltered ; it may be noted, however, that 235 barrels of Russoline brand were sold on Tuesday at auction without reserve at 4¼d.

COLOURS unaltered. Ochres : Oxfordshire, common, £10., medium, £12., best, £15. ; Derbyshire, common, 40s., medium, 50s., best, 60s. Welsh, best, 70s., seconds, 50s., and common, 18s. ; Irish, Devonshire, 40s. to 45s. ; French, J.C., 55s. to 60s. ; M.C., 65s. to 67s. 6d. Umber : Turkish quiet. Devonshire, 50s. to 55s. White lead, red lead, and oxide of zinc unchanged. Venetian red, £6. 10s. to £10. Cobalt : Prepared oxide, 10s. 6d. ; black, 9s. 9d. ; blue, 6s. 6d. Zaffres : No. 1, 3s. 6d. ; No. 2, 2s. 6d. Oxide of iron : common, £6. ; medium, £10. ; finest, £20.

THE METAL MARKET.

LONDON, WEDNESDAY.—Pig iron flat ; Scotch warrants closed at 41s. 1d. cash. Middlesbrough 37s. 3d. cash, and Hematite 46s. 10d. cash. Copper, steady. Chili bars, G.O.B.'s and G.M.B.'s closed at £47. 2s. 6d. cash, and £47. 12s. 6d. to £48. three months. Tin quiet : Straits closed at £89. 10s. to £90. cash, and £89. 15s. to £90. 5s. three months. Australian, £89. 15s. cash ; English ingots, £93. Lead easier : Spanish, £10. 18s. 9d. English, £11. 2s. 6d. Silesian spelter, ordinary, £21. 15s. Quicksilver, £7. 2s. 6d. first hands and second hands, £7. 2s. Copper shares firm : Cape, 1⅝ to 1¾ ; Copiapo, $2\frac{3}{16}$ to $2\frac{5}{16}$; Libiola, 3¼ to 3½ ; Mason and Barry, $5\frac{1}{16}$ to $5\frac{3}{16}$; Rio Tinto, $18\frac{7}{16}$ to $18\frac{9}{16}$; Tharsis, 5¾ to 5⅞ ; Namaqua, $1\frac{5}{16}$ to $1\frac{7}{16}$; Panulcillo ⅝ to ¾.

REPORT ON MANURE MATERIAL.

There has been more enquiry during the week, and a moderate business doing, but the attitude of buyers is still that of hold-back, and prices for both phosphatic and nitrogenous material continue to tend downwards.

There are sellers of 75/80% Florida phosphate rock at 8½d. per unit in cargoes to United Kingdom or Continent, and of hot-air-dried Peace River rock, 60%, at 7½d. Hot-air-dried South Carolina River rock cannot be valued at over 7½d., though sellers ask more money, and seem inclined to wait for a chance of recovery in values. Nothing special to note in Continental or other descriptions of phosphate.

The market for bones and bone meal is very inanimate. A cargo of River Plate bones, afloat, has been sold at £4. 2s. 6d., and that may be considered as nearest value in the *afloat* position. For *shipment* there is no inducement to sell at £4. 2s. 6d., and £4. 5s. to £4 7s. 6d. would have to be paid. On spot crushed Kurrachee bones are worth £4. 7s. 6d., but for shipment £4. 5s. is nearest value, ex quay Liver- pool. For fine parcels of Bombay bone meal on spot £4. 10s. is required. Parcels largely charged with sand and carbonate of lime may be had at 7s. 6d. or 10s. less, and some of them would be dear at that. Fair average quality afloat offers at £4. 6s. 3d. to £4. 7s. 6d., according to position.

Nitrate of soda is very quiet in all positions. Spot is not worth more than 9s. 1½d. to 9s. 3d., according to quantity and test, and 9s. is now full values of cargoes afloat. So far there is an entire absence of agri- cultural demand, and sellers naturally want to be moving their stocks. Should the brighter weather continue the agricultural demand may be expected to set in and stop the downward movement, and possibly effect a recovery between this and the end of April, when the January shipments will have begun to tell on the market.

There is fair enquiry for dried blood. A parcel of River Plate, arrived, has been sold at 8s. 7½d. to 8s. 10½d. per unit ex quay, but for fine home prepared 9s. 6d. enquired f.o.r. at works.

Kainit is still scarce at 45s. per ton in bags, ex quay Liverpool. Superpphosphates unchanged.

MISCELLANEOUS CHEMICAL MARKET.

The general position of chemicals in the alkali trade is without material change. Bleaching powder continues in good demand, and prices steady at £7. 10s. f.o.r. makers' works, Lancashire. The advance is maintained on caustic soda, though there are still ample stocks to meet current demand. Prices are for 77%, f.o.b. Tyne, £11. 10. per ton, and f.o.b. Liverpool, 70%, £10. 10s., 60% £9. 7s. 6d., and cream 60% £9. 2s. 6d. per ton. Chlorate of potash firm at 7d. per lb. for future deliveries, and 6⅞d. to 7d. per lb. on the spot. Soda practically unobtainable for prompt price, 7½d. per lb. Soda crystals and saltcake move fairly well at former prices. Soda ash of all qualities is in moderate request. We quote caustic, 48%, £5. 3s. 9d ; carb., 48%, £5. 7s. 6d., and 58%, £6. 5s., rails, makers' works. Lead salts flat, and but little business passing. Foreign white acetate is still quoted at £26. ; brown, £17s. 10s. ; English make—white, £27 10s. ; grey, £23s. Acetate of soda dull, and prices generally are weaker. Acetates of lime slightly firmer, but prices are far from satisfactory, £10. for grey and £6. 10s. for brown may be taken as values to-day. Sulphate of copper does not improve, the demand is poor and the price £14. 5s. to £14s. 10s. f.o.b. Sulphur has a slightly lower tendency. Current prices are lowered about the same, viz., £5s. 15s. rock, and £7. 10s. for roll, rails, Widnes, etc. Hyposulphite of soda rather firmer at £7. 2s. 6d., rails. Bichromate steady, and without change. Sulpho cyanides neglected at former prices. Carbolic acids still quoted at very low rates. The small amount of business being done is principally for prompt delivery, the ruling prices offering but little temptation to makers to quote far forward.

THE LIVERPOOL MINERAL MARKET.

On account of the coal strike our market has been somewhat quieter. Manganese: Arrivals this week are practically nil, whilst a fair amount of business has been done, and stocks are considerably reduced ; prices, therefore, continue firm, with an upward tendency. Borate, 6¼d. per lb. ; sulphate, £21. 10s. ; oxalate, 1s. 6d. per lb. ; chloride, £15. ; carbonate, £12. 10s., steady. Magnesite: Raw lump remains flat. Raw ground £6. 10s., and calcined, £12. 10s. Bauxite (Irish Hill brand) brisk at full figures ; lump, 20s. ; seconds, 16s. ; and thirds, 12s. French chalk: Arrivals somewhat smaller this week ; a good business, however, has been done at full figures. "Angel White" brand ; silvery, 90s. to 92s. 6d. ; prime quality, 90s. to 95s. ; and superfine, 105s. Barytes :—Carbonate continues scarce ; for all qualities, 90s. to 95s. ; nuts, 70s. to 80s. ; whilst finest white sulphate is steady. "Angel White," No. 1, 70s. ; No. 2, 60s. to 65s. ; No. 3, 45s. Pumicestone steady. Iron ore: Bilbao rather scarce; Irish and Cumberland easy. Santander and manganiferous, there is more doing. Emerystone: Best qualities firm, bringing full prices; No. 1 lump, £5. 10s. to £6. ; smalls, £5. to £5. 10s. Fullers' earth quiet; best lump, 55s. ; fine impalpable ground, £7. ; "Emerald" ground, 80s. Scheelite, wolfram, tungstate of soda, and tungsten metal strong, with advance in price. Chrome ore of high percentage continues scarce, both for spot and forward delivery bringing full figures. Antimony ore and metal considerably easier. Asbestos firm. Potters' lead ore of best quality quiet ; smalls, £12. 10s. to £13. 15s. ; selected lump, £14. 10s. to £15. 10s. Calamine easy. Strontia sulphate (celestine) quiet. Limespar unchanged, especially for English manufactured ; old G.G.B. brand in demand at 50s. (ground). Felspar unchanged. Fluorspar: Best quality scarce. Ferromanganese firmer, 75%, £12. ; 85%, £13. 15s. Plumbago brisk. Spanish, £5. ; best Ceylon lump at last quotations ; Italian and Bohemian, £4. to £12. per ton. "Founders," £5. to £6. ; Blackwell's "Mineraline," £10. French sand, 20s. to 22s. 6d. Ground mica, £45 to £50. China clay steady; common, 18s. 6d. ; good medium, 22s. 6d. to 25s. ; best, 30s. to 35s. (at Runcorn). Bog ore (oxide of iron) steady ; finest quality, 22s. to 23s.

TYNE CHEMICAL REPORT.

Tuesday.

Chemicals are steady and stocks are being reduced under the restriction of make caused by the miners' strike. An advance of 5s. has been made in the price of 70% caustic soda, this strength being now quoted at £10. 10s. f.o.b. Tyne, nett. Bleaching powder is in strong demand. Bleaching powder, softs, £7. 10s. per ton, hards, £7. 15s. per ton ; caustic soda, 77%, £11. 10s. per ton, 70%, £10. 10s. per ton ; recovered sulphur, 2 cwt. bags, £5. 10s. per ton ; soda ash, 48%, £5. 8s. 9d. per ton, 52%, £5. 17s. 9d. per ton, 56%, £ per ton ; alkali, 36%, £4. 18s. 6d. per ton ; white all £6. 10s. per ton, 50%, £6. 15s. 6d. per ton, 52%, £7. hyposulphite of soda, £7. per ton in 5-7 cwt. casks, £7. 15 in 1 cwt. kegs, both in 10 ton lots ; silicate of soda, 75° Tw ton, 100° Tw. £4. per ton, 140° Tw. £4. 7s. 6d. per ton ; sod in casks, £2. 17s. 6d. per ton gross weight, in 2 cwt. bags, £ per ton nett weight ; chlorate of potash, 6½d. per lb. less hardening, £3. 10s. per ton ; pure white sulphate of £4. 10s. per ton ; blanc fixe, £7. 10s. per ton ; chloride £7. 10s. per ton ; nitrate of baryta crystals, £17. per ton of baryta, ground, £17. 10s. per ton ; sulphide of barium, ton ; carbonate of alumina, £28. 10s. per ton ; aluminat £33. 10s. per ton ; hydrate of barium, £11. per ton.

Salt steady, at 9s. per ton nett f.o.b. Tees. A rather bett for fishery.

Coals: There is nothing new to report as regards the Durha strike. The northern coal trade is generally weaker and Northumbrian coals are lower. Best steam coal, 11s. per Tyne ; small steam, steady at about 5s. per ton ; gas coal, about 14s. per ton, though lower prices are reported fo deliveries. There is little or no coke in the market.

WEST OF SCOTLAND CHEMICALS

GLASGOW, Tu

Manufacturers' outlook upon the mineral oil (paraffin) sect market gets less assured week by week. Season's demand f oil is well nigh at an end, and stocking has been resumed. contracts are being made for scale and wax, and that is a Small lots for present needs only are called for, at the regula given below, but consumers (candlemakers chiefly) become more convinced that it will be impossible to maintain these they are bound to give way, now that joint American and nati put upon the British market are so increased. Unsold already large, and they continually grow. Lubricating and g oils are also flat, in sympathy with the recent drop in Americ and values in the lower gravities are likely to further droop.

Sulphate of ammonia is weaker, £10. 2s. 6d. spot having and for forward (April to December) on report at £10. 5

In general chemicals there has been no improvement of de prices in several cases are inclined to rise. Chlorate of potas soda, and sulphate of copper are all dearer.

Chief prices current are:—Soda crystals, £2. 17s. 6d., n alum in lump, £5. 10s., nett Glasgow ; soda ash, 1⅜d., Tyne; caustic soda, white, 74°, £11. 5s., 70/72°, £10. 10s £9. 7s. 6d., and cream 60/62°, £9. 2s. 6d., all nett Liverp bonate of soda, 5 cwt. casks, £6. 15s., and 1 cwt. casks, £7. refined alkali, 1⅝d., less 2½% Tyne ; bleaching powder, £ nett Tyne ; saltcake, 37s. 6d. ; borax, English refined, boracic acid, £37. 10s., nett Glasgow ; bichromate 3¾d., less 10% for Scotch and English deliveries (f 3½d., less 10% f.o.b. Glasgow) ; bichromate of sod less 10% for Scotch and English deliveries (for expo less 10% f.o.b. Glasgow); chlorate of potash, 7d., less port ; nitrate of soda, 9s. 3d. ; sulphate of ammonia, £1 to £10. 3s. 9d. f.o.b. Leith ; salammoniac, first and second w and £33., less 5% any port ; sulphate of copper, £15. less 5% paraffin scale (hard), 2 13/16d., and soft 2 5/16d. to 3d. per lb. wax, 120°, semi-refined, 3⅝d. to 4d. ; paraffin spirit (napht gallon ; paraffin oil (burning) 5d., 5¼d. and 5½d. accordin at works, for Scotch buyers (English sales about 1d. low (lubricating), 865°, £3. 15s. to £4., 885°, £5. 5s. to 890/895°, £6. to £8. Week's imports of raw sugar at Gree 24,943 bags.

New Companies.

Durham Coke and Bye-Products Co., Limited.—This company w on the 12th inst., with a capital of £25,000., in £100. shares, to acqui title, and interest of Messrs. Simon, Carvès, Pernolet and Mallet, in a contract entered into on February 13th, 1892, with Mr. S. A. Sadler, an the business of carbonizing coal and manufacturing and turning to residual bye-products. The subscribers are :—

Carvès, 87, Rue Layfayette, Paris .....
H. Simon, 20, Mount-street, Manchester, civil engineer .....
P. Mallet, 87, Rue Layfayette, Paris, ingènieur .....
A. Pernolet, 87, Rue Layfayette, Paris, ingènieur .....
J. Ingleby, 20, Mount-street, Manchester, civil engineer .....
S. A. Sadler, Middlesbro', chemist and coal owner .....
C. J. Sadler, Lanchester, colliery agent .....

GALVANIZING CO., LIMITED.—This company was registered on the 10th
with capital of £75,000., divided into 2,500 10 per cent. preference and 4,950
shares of £10. each, and 500 founders' shares of £1 each, to purchase or
acquire any patents, patent rights, etc., in connection with the galvaniz-
n, steel and other metals, and to carry on the business of manufacturers of
and other metals, whether coated with lead or otherwise. The subscribers

	Shares.
V. E. Olivey, K.C.B., 3, Stormont-road, Lavender Hill, S.W.	1
Matineau, 6, Gt. Winchester-street, E.C., civil engineer	1
Binet, 6, Gt. Winchester-street, E.C., civil engineer	1
C. Stanley, 5, Bina Gardens, S.W.	1
Harrington, 37, Forfolk-street, Strand, W.C.	1
H. Davies, Winchester House, E.C.	1
O'Toole, Winchester House, E.C.	1

ES, SMITHSON AND PICKLES, LIMITED.—This company was registered
th inst., with capital of £60,000., in £10. shares, to acquire and carry on
ess of dyers, drysalters, dye and chemical manufacturers, etc., carried on by
Smithson and Pickles at Ravensthorpe and Dewsbury, Yorks, and with a
reto to adopt an agreement dated March 5th, 1892, between Mr. T J.
f the first part, Mr. S. Smithson of the second part, Mr. C. H. Pickles of
part, Messrs. T. J. Pickles, S. Smithson, and C. H. Pickles of the fourth
d Mr. P. R. Sewell (for the company) of the fifth part. The subscribers

	Shares.
Smithson, Bright's-villa, Heckmondwike, dyer	1
Neil, South-villa, Hoobury, near Wakefield	1
Milner, Spen-villa, Ravensthorpe	1
J. Smithson, Heckmondwike, dyer	1
Pickles, Oak House, Heckmondwike, dyer	1
Pickles, Oak House, Heckmondwike, dyer	1
Kelley, 29, Collegiate-crescent, Sheffield, brewer	1

ND WATER POWDER-PAINT COMPANY, LIMITED.—Registered on 23rd inst.,
apital of £3,000. in £1, shares. Object, to carry into effect an agreement,
arch 2nd, between H. E. Kent of the one part and W. Thompson of the
rt, and generally to carry on business as manufacturers of paint-powder in all
hes. Most of the regulations contained in Table A apply.

The Patent List.

list is compiled from Official sources in the Manchester Technical tory, under the immediate supervision of George E. Davis and R. Davis, who report professionally upon the value of Chemical ts.

APPLICATIONS FOR LETTERS PATENT.

ng Oxide of Iron from Spent Oxide, etc. C. Kirkpatrick and The ic Sewage and Water Purification Co., Ltd. 4,440. March 7.
ed Socket Joint for Metal or other Pipes. H. Young and J. Lonsdale. t. March 7.
ements in Metallic Alloys. W. P. Thompson. 4,460. March 7.
ed Artificial Stones. J. S. Holliday. 4,495. March 7.
ements in the Manufacture of Glass Bricks. H. D. Fitzpatrick. 5. March 8.
s for the Purification of Brine. C. G. Collins. 4,527. March 8.
ements in Bricks. T. Irlam. 4,538. March 8.
s for the Manufacture of Pressed Glass Articles and Apparatus erefor. H. H. Pitt. 4,545. March 8.
atic Sewage Filter. J. Lowe. 4,549. March 8.
Improvements in Burning Portland Cement. J. W. Knights 4,553. Mar. 8.
Smoke Consuming and Economizing Fuel. A. Jones and E. Shepherd. 4,556. March 8.
Secondary Batteries J. V. Sherrin. 4,576. March 8.
Manufacture of Glass Articles and Apparatus Therefor. F. Wright and C. Rawle. 4,585. March 8.
Magnetic Ore Separators. C. T. Thompson and R. H. Sanders. 4,586. Mar. 8.
Improvements in the Manufacture of Soap. J. Gibson and C. Estcourt. 4,649 March 9.
Improvements in the Manufacture of Ferric Chloride. H. C. Bull and G. W. Sharp. 4,657. March 9.
Improvements in the Manufacture of Nitro-Glycerine. A. Philip. 4,659. March 9.
Improvements in the Manufacture of Nitro-Glycerine. A. Philip. 4,660. March 9.
New Colouring Matters of Dyes. P. Monnet. 4,677. March 9.
Improvements in Petroleum or other Liquid Hydrocarbon Burners. W. E. Smith and J. M. McMurtrie. 4,679. March 9.
Obtaining Gas from Oils, etc. J. Moelier. 4,728. March 10.
Improvements in Hydro-Carbon Motors. J. E. Weyman, A. J. Drake and J. A. Drake. 4,735. March 10.
Obtaining Sulphocyanides from Waste Liquors. H. W. Crowther. 4,765. March 10.
Improvements in Electric Batteries. S. M. McQuay. 4,768. March 10.
Machines for Distributing Insecticides and Artificial Manures, etc. J. Munday. 4,807. March 11.
Improvements in Primary Batteries. Leon Mercky. 4,820. March 11.
Improvements in the Manufacture of Soda and Potash. F. Ellershausen 4,851. March 11.
Ore Reducing and Amalgamation Apparatus. R. E. Shill. 4,853. Mar. 11.
Improvements in the Manufacture of Soap. H. Shaw. 4,883. March 12.
Improvements in the Manufacture of Sulphocyanides. M. N. D'Andria. 4,903. March 12.
Obtaining a Smokeless Flame from Liquid Hydrocarbons. J. Lee and S. Lancaster. 4,907. March 12.
Apparatus for Filtering Saccharine and other Liquids. T. O Easton, A. Watt and J. Buchanan, jun. 4,911. March 12.
Improvements in the Manufacture of Colouring Matters. F. Geromont and H. Goldenberg. 4,932. March 12.

Gazette Notices.

PARTNERSHIPS DISSOLVED.

E. TUNBRIDGE AND J. N. WRIGHT, under the style of Tunbridge and Wright, Reading, chemists and druggists.

E H. PANES, R. W. SPRIGS, E. HEATH, AND T. A. B. PANES, under the style of the Derby Vinegar Brewery Co., Derby, vinegar brewers.

BANKRUPTCY ACTS, 1883 AND 1890.

Receiving Orders.

LUSCOMBE, THOMAS, Torre, Devonshire, oil and colourman.

SKELSON AND PLANT, Longton, Staffs., earthenware manufacturer.

WOOD, STEWART, Stoke-on-Trent, late trading in partnership with J. A. Steel and L. B. Wood, as Steel and Wood, of Stoke-upon-Trent, Cobridge, Staffs., now out of business, late manufacturer of tiles.

MORLEY, J. (trading as J. Morley and Co.), Castle Bromwich and Birmingham, glass and lead merchant.

Adjudications.

GRAINGER, T. J. P., Ryde, Isle of Wight, oil merchant and ironmonger.

LUSCOMBE, T., Torre, Devonshire, oil and colourman.

WOOD, STEWART, Stoke-upon-Trent, Staffs., now out of business, late manufacturer of tiles.

Order made on Application for Discharge.

STILL, ADAM (trading as Knapman and Co.), Walton and Liverpool, window glass and oil and colour merchant, discharge of bankrupt suspended for two years.

IMPORTS OF CHEMICAL PRODUCTS

AT

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending March 12th.

ne—

nd,	2 pks.	A. & M. Zimmermann

Acid—

nd,	186 pks.	A. & M. Zimmermann

te of Lime—

	526 pks.	H. Wallace & Co.

—

e,	100 c.	Arnati & Harrison
	205	P. Hecker & Co.

Alum—

Holland,	78 pks.	Ohhenschlager Bros.

Barytes—

Germany,	24 cks.	O'Hara & Hoar
,,	6	G. Steinhoff
,,	66	H. Lambert
Belgium,	22	Leach & Co.
,,	20	S. H. Willoughby
Holland,	7	J. Lyon & Co.
France,	39	J. B. Orr & Co. Ltd.

Brimstone—

Italy,	5 t.	Typke & King
France,	3	McDougall & Boutron
Italy,	5	G. Boor & Co.
,,	5	C. Tennants, Sons & Co.

Caoutchouc –

Madagascar,	166 c.	L. & I. D. Jt. Co.
,,	13	Prop. Bull Wf.
France,	2	M. M. de France
E. Indies,	36	Major & Field
Rangoon,	221	J. H. & G. Scovell
Holland,	104	W. Balchin
Uruquay,	62	Lewis & Peat
U. S.,	1	Knight & Morris
E. Indies,	102	E. Barber & Co.
Madagascar,	346	A. Frey & Co., Ltd.
,,	22	Gellatly, Hankey & Co.
Penang,	30	L. & I. D. Jt. Co.
Madagascar,	4 c.	S. Baker & Co.
Zanzibar,	34	Clarke & Smith
France,	10	Flageollet & Co.
Madagascar,	6	Proctor Bros.
,,	10	S. Figgis & Co.
Zanzibar,	43	L. & I. D. Jt. Co.
,,	11	Lewis & Peat
Uruquay,	65	Knowles & Foster

Carbolic Acid—

U. S.,	28 pks.	C. F. Gerhardt

Chemicals *(otherwise undescribed)*

Germany,	10 82 pks.	T. H. Lee
,,	10	Craven & Co.
,,	21	Phillipps & Graves
Holland,	1	Barr, Moering & Co.
Germany,	31	A. & M. Zimmermann

Copper Pyrites—
Spain, 650 t. F. C. Hills & Co.

Cream of Tartar—
Holland, 11 pks. Middleton & Co.
Spain, 7 B. & F. Wf. Co.
France, 40 ,, ,,
,, 8 W. C. Bacon & Co.
,, 24 W. Johnston & Co., Ltd.
Holland, 27 N. Smith
France, 5 M. Ashby, Ltd.

Dyestuffs *(otherwise undescribed)*
France, 100 pks. Bennett S.S , Co., Ltd.

Alizarine
Holland, 14 pks. J. Forsey

Argols
France, 42 pks. N. S. S. Co. Ltd.

Cochineal—
Canaries, 16 pks. L. & I. D. Jt. Co.
,, 20 Swainston & Co.
,, 6 Kuhner, Henderson & Co.
,, 10 Johnson, Hicks & Co.

Cutch
Rangoon, 1,000 pks. Head, Morrison & Co.
,, 4,000 Wallace Bros.
,, 576 S. Figgis & Co.
,, 3,490 H. A. Litchfield & Co.
,, 1,660 A. Howden & Co.
,, 1,900 Elkan & Co.
,, 500 H. J. Perlbach & Co.
,, 1,500 Middleton S.S Wf. Co.

Divi Divi
Trinidad, 95 pks. Culverwell, Brooks & Co.

Extracts
France, 87 pks. L. J. Levinstein & Sons
,, 68 cks. B. & F. Wf. Co., Ltd.

Gambier
Singapore, 124 pks. S. Barrow & Bros.
,, 168 Baxter & Hoare
,, 273 R. & J. Henderson

Indigo
E. Indies, 19 chts. Darling Bros.
,, 141 Stansbury & Co.
,, 42 Arbuthnot, Latham & Co.
,, 22 Ralli Bros.
,, 227 Parsons & Keith
,, 6 Steinthal & Co.
,, 31 Elkan & Co.
,, 6 J. Owen
,, 1 P. & O. Co.
,, 9 G. Ward & Sons
,, 41 Ernsthausen & Co.
,, 10 F. Huth & Co.
,, 299 L. & I. D. Jt. Co.
,, 123 W. Johnston & Co., Ltd.

Myrabolams
E. Indies, 500 pks. W. Shelcott

Orchella
Ceylon, 9 pks. Prop. Sun Wf.
Zanzibar, 87 Gray, Dawes & Co.
Portugal, 12 Knowles and Foster
Ceylon, 2 Lewis & Peat

Saffron
Spain, 2 pks. Major & Field
,, 2 Mancha & Co.

Sumac
Italy, 100 pks. B. & N. Wf. Co. Ltd.

Tanners' Bark
Belgium, 27 t. Bevington & Son
Natal, 5 A. & W. Nesbitt

Turmeric
E. Indies, 105 pks. L. & I. D. Jt. Co.
Hong Kong, 187 Crosse & Blackwell

Valonia
A. Turkey, 24 t. J. Craves
,, 18 Mavro, Valieri & Co.
,, 48 Anning & Cobb
,, 53 Beresford & Co.
,, 8 A. & W. Nesbitt
,, 110 Boutcher, Mortimer & Co.

Glucose—
France, 100 pks. 100 c. J. F. Ohlmann
,, 150 900 R. G. Hall & Co.
,, 50 281 Beresford & Co.
Germany, 25 227 Prop. Chmbln.'s Wf.
Holland, 80 80 C. A. Farmer
U. S., 125 237 Fellows, Morton & Co.
,, 1,450 1,950 R. G. Hall & Co.
,, 650 650 Lichtenstein & Co.
,, 150 845 Pillow, Jones & Co.
,, 400 400 Humphery & Co
,, 50 302 Soundy & Son
,, 720 560 T. M. Duche & Son
,, 25 125 Hyde, Nash & Co.
,, 25 137 W. Isted
,, 25 137 Page, Son & East
,, 200 200 Barratt, Tagant & Co.
France, 400 400 L. Norman & Co.
U. S., 380 2,090 Prop. Chmbln.'s Wf.
France, 1 10 Arnati & Harrison
U. S., 50 275 C. Southwell & Co.
,, 250 250 J. Knill & Co.
,, 250 662 L. Sutro & Co.
,, 250 250 Williams, Torrey & Co.

Isinglass—
Penang, 3 pks. L. & I. D. Jt. Co.

Manganese—
Australia, 128 t. French & Smith
Japan, 22 Contl. L'thge. Co.

Manganese Oxide—
Germany, 5 pks. H. Lambert

Manure—
Germany, 50 t. Perkins & Homer
,, 151 F. W. Berk & Co., Ltd.

Methyl Alcohol—
Germany, 10 cks. Elkan & Co.

Naphtha—
Holland, 5 cks. Barr, Moering & Co.

Ochre—
Germany, 11 cks. Phillipps & Graves
Holland, 13 pks. ,, ,,
France, 41 cks. C. J. Capes & Co.

Oxalic Acid—
Holland, 20 pks. Beresford & Co.

Painters' Colours—
Belgium, 20 cks. Union L. Co. Ltd.
Germany, 2 4 pks. Phillipps & Graves
France, 5 pks. Bennett S.S. Co , Ltd.
U. S., 49 Anglo-American Oil Co.
Germany, 22 L. & I. D. Jt. Co.
,, 7 T. H. Lee
Holland, 2 J. L. Lyon & Co.
,, 2 Societe Maritime Belge
Belgium, 14 Barr, Moering & Co.
France, 4 pks. Flageollet & Co.

Paraffin Wax—
U. S., 3 brls. L. & I. D. Jt. Co.
,, 310 cs. H. Hill & Sons
Germany, 55 Grosscurth & Ludboldt

Pearl Ashes—
France, 104 c. Petri Bros.

Phosphate Rock—
France, 5 t. Lawes Chemi. M'nre. Co.
Holland, 100 Anglo-C'nttnl. Guano Works
Belgium, 50 F. C. Hills & Co.
,, 135 Lawes Chemi. M'nre. Co.

Pitch—
S. Russia, 4 cks. Bessler, Waechter & Co.

Plumbago—
Ceylon, 205 brls. Prop. Sun Wf.
Holland, 10 cks. 78 pks. B. Gallaway
Germany, 67 css. T. H. Lee
Ceylon, 64 brls. Dalton & Co.
,, 381 J. Thredder, Son & Co.

Potassium Bromide—
U. S., 50 pks. Baiss, Bros. & Co.
,, 22 Evans, Lescher & Co.
,, 20 Fuerst Bros.

Potassium Carbonate—
Germany, 19 cks. Beresford & Co.
France, 105 c. J. A. Reid

Potassium Chlorate—
Belgium, 50 pks. G. Boor & Co.

Potassium Oxalate—
Germany, 30 pks. A. Hughes

Potassium Sulphate—
Belgium, 44 cks. F. W. Berk & Co., Ltd.
Germany, 203 pks. Bessler, Waechter & Co.

Saltpetre—
Germany, 40 cks. J. Hall & Son
,, 80 kgs. P. Hecker & Co
E. Indies, 2,466 bgs. Ralli Bros.

Soda—
Germany. 30 c. Hammond & Co.

Sodium Acetate—
Belgium, 9 pks. Magee, Taylor & Co.

Sodium Bromide—
U. S., 4 pks. Soundy & Son

Sodium Chlorate—
France, 100 pks. A. Hughes

Sugar of Lead—
Germany, 16 pks. A. Hughes
,, 66 Barr, Moering & Co.

Tartaric Acid—
Holland, 13 pks. Middleton & Co.
,, 10 B. & F. Wf. Co. Ltd.
,, 14 N. Smith

Ultramarine—
Germany, 1 ck. Phillipps & Graves
,, 4 pks. H. Brooks & Co.
Holland, 1 brl. Little & Johnston
,, 12 pks. Haeffner, Hilpert & Co.
,, 10 Hernu, Peron & Co.
Germany, 10 cs. G. Steinhoff
,, 4 cks. H. Lambert

Verdigris—
France, 3 pks. B. & F. Wf. Co , Ltd.

White Lead—
Germany, 26 cks. W. A. Rose & Co.
,, 1 Petri Bros.
Holland, 15 S. H. Willoughby
,, 46 N. J. Fenner & Co.
France, 45 W. Harrison & Co.
Germany, 147 H. Lambert
,, 24 O'Hara & Hoar
,, 70 G. Steinhoff
,, 14 Gross, Sherwood & Co.
,, 45 Magee, Taylor & Co.
,, 22 M. Ashby, Ltd.

Zinc Oxide—
Holland, 175 brls. M. Ashby, Ltd.
U. S., 100 ,, ,,
Holland, 2 J. Van Dulken
Germany, 25 M. Ashby, Ltd.
,, 50 cks. J. Matton
Holland, 20 J. Owen

LIVERPOOL.

Week ending March 17th.

Acids—
Leghorn, 16 cks. Shropshire Union
Havre, 5 cs. Cunard S. S. Co., Ltd.

Acetic Acid—
Rotterdam, 10 btls.

Borax—
Valparaiso, 3,190 bgs.

Chemicals *(otherwise undescribed)*
Rotterdam, 8 cs.

Chloral Hydrate—
Rotterdam, 3 css.

Copper Pyrites—
Huelva, 1,250 t. Matheson & Co.

Cream of Tartar—
Barcelona, 22 cks. 2 pps.

Dyestuffs—
Argols
Oporto, 32 cks. German Bk. of London
Bordeaux, 57 cks.
Cochineal
Gd. Canary, 14 bgs. J. Goddard & Co.
Divi divi
New York, 1,032 bgs.
Santa Martha, 104
Fustic
Savanilla, 2,837 bgs. G. H. Miller & Co.
Logwood
Demerara, 20 t. O. Garnett & Co.
Myrabolams
Bombay, 2,720 bgs R
,, 2,410 D. Sass
,, 1,000 Ritchie
,, 360 Aldridg
,, 3,794
Sumac
Trieste, 4 brls.
Palermo, 200 ,, J. Kite
,, 515 150 bgs.
Bordeaux, 113
Valonia
Constantinople, 11 bgs.
Marathonisi, 180 t. R
,, 115 t. G. J. P

Farina—
Fiume, 200 sks.
,, 75 bgs. C. J. Veer
Antwerp, 80 cs. J. F. Fletch

Glucose—
In transit, 10 cks.
New York, 884 brls.

Manganese—
Parman, 2,000 t. Wigan Coal &

Manganese Ore—
Carthagena, 1,950 t. Wigan

Phosphate—
Dunkirk, 1,500 bgs.

Potashes—
Portland, Me , 30 brls.

Potassium Carbonate—
Hamburg, 11 cks

Pyrites Sulphate—
Huelva, 1,096 t. Mathes

Rosin—
Wilmington, 3,140 brls.

Saltpetre—
Hamburg, 2 cks. 50 kgs.

Soap—
Bari, 426 css.
Leghorn, 250 bxs.
New York, 2
Boston, 2 cs. J. Th

Sodium Silicate—
Rotterdam, 2 cks.

Stearine—
New York, 100 hds.
Antwerp, 12 bgs.

Sugar of Lead—
Rotterdam, 40 cks.

Tar—
New York, 390 brls.

Tartar—
In transit, 2 cs. Pellerara
Bordeaux, 2 cks.
Naples, 2
Rotterdam, 7

Tartaric Acid—
Rotterdam, 7 cks.

Ultramarine—
Hamburg, 1 ck.
Rotterdam, 3 cs.

Verdigris—
Bordeaux, 3 cks.

Waste Salt—
Hamburg, 999 bgs.

Zinc Ashes—
Rotterdam, 20 brls. R. Crooke

Zinc Oxide—
Antwerp, 20 brls. J. T. Fletche
,, 43
Rotterdam, 55 cks.

GLASGOW.

Week ending March 17t

Aluminium—
Antwerp, 12 css.

Barytes—
Rotterdam, 229 cks.

Borax—
Hamburg, 3 cks.

Chemicals *(otherwise undesc*
Rotterdam, 1 cs. Jas. Rankine

er Pyrites—
lva, 1,722 t. Tharsis Co., Ld.
m of Tartar—
seilles, 15 brls.
tuffs *(otherwise undescribed)*
on, 100 bxs.
tuffs—
lizarine
terdam, 48 cks. 2 css.
xtracts
werp, 3 cks.
ndigo
utta, 32 chts. 35 css.
adder
terdam, 5 cks. Jas. Rankine & Son
ose—
York, 349 brls.
panese—
erdam, 3 cks. Jas. Rankine & Son
e—
leaux, 14 cks.
seilles, 25 brls.
ers' Colours—
burg, 2 cks.
phate of Lime—
erp, 141 t.
sium Prussiate—
burg, 37 cks.
etre—
burg, 12 cks.
—
delphia, 300 bxs. 48 crates
e of Lead—
burg, 12 cks.
P Emetic—
burg, 8 cks.

White Lead—
Rotterdam, 82 cks.

HULL.

Week ending March 10th.

Ammonia—
Rotterdam, 7 cks. W. & C. L. Ringrose
Chemicals *(otherwise undescribed)*
Antwerp, 22 cks. Wilson, Sons & Co., Ld.
Rotterdam, 14 pks. W. & C. L. Ringrose
Copenhagen, 3 cks. W. & C. L. Ringrose
Cryolite—
Copenhagen, 26 cks. Wilson, Sons & Co., Ld.
Dyestuffs—
Alizarine
Rotterdam, 26 cks. Hutchinson & Son
Rotterdam, 44 cks. 2 cs 86 pks. W. & C. L. Ringrose
Argols
Bordeaux, 72 bgs. Rawson & Robinson
Indigo
Amsterdam, 3 chts. W. & C. L. Ringrose
Madder
Amsterdam, 77 pks. W. & C. L. Ringrose
Farina—
Ghent, 200 bxs.
Glucose—
New York, 360 brls. Wilson, Sons & Co., Ld.
Naphtha—
Rotterdam, 1 ck. W. & C. L. Ringrose
Ochre—
Marseilles, 133 cks. Wilson, Sons, & Co., Ld.
Oleine—
Marseilles, 30 cks. Wilson, Sons & Co., Ld.
Dunkirk, 8
Rotterdam, 4 Geo. Lawson & Son
Potash—
Rotterdam, 12 cks.
Soap—
Marseilles, 1 cs. Wilson, Sons & Co. Ld.
Tar—
Marseilles, 88 cks.
Tartar—
Bordeaux, 5 cks.
Tartaric Acid—
Rotterdam, 6 cks. W. & C. L. Ringrose
Waste Salt—
Hamburg, 508 bgs. Furley & Co.
White Lead—
Rotterdam, 85 cks.

TYNE.

Week ending March 12th.

Salt—
Hamburg, 290 t. Clephans, Wiencke & Co.
Zinc Oxide—
Antwerp, 35 brls. Tyne S. S. Co.

GOOLE.

Week ending March 2nd.

Alum—
Rotterdam, 3 cks.
Caoutchouc—
Boulogne, 9 cks.
Dyestuffs *(otherwise undescribed)*
Boulogne, 42 cks. 29 css.
Dyestuffs—
Alizarine
Rotterdam, 101 cks.
Farina—
Hamburg, 100 bgs.
Saltpetre—
Hamburg, 30 cks.
Sodium Silicate—
Rotterdam, 1 ck.
Ultramarine—
Rotterdam, 3 css.
Waste Salt—
Hamburg, 500 bgs. 32 cks.

GRIMSBY.

Week ending March 5th.

Chemicals *(otherwise undescribed)*
Hamburg, 4 pks.
Antwerp, 10 cks.
Farina—
Hamburg, 100 bgs.
Waste Salt—
Hamburg, 500 pks.
Zinc Ashes—
Antwerp, 9 pks.

EXPORTS OF CHEMICAL PRODUCTS

OF

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending March 16th.

—
magoa, 2 cs. £8
adoes, 8 pks. 15
Town, 35 cs. 12
land, 30 44
ton, 24 47
al, 6 pks. 26
ras, 10 cs. 11
Vincent, 2 cks. 17
seldorf, 130 drs. 236
gne, 200 300

ic Acid—
edin, 11 c. £22

li—
utta, 5 c. £6

a—
agan, 6 t. 18 c. £41
nica, 10 56

monium Carbonate—
laide, 14 c. £30

monium Chloride—
bane, 1 ck. £9

monia and Disinfectants—
bay, 5 pks. £16

monium Sulphate—
idad, 88 t. 8 c. £998
port, 20 6 220
nt, 31 6 335
nerara, 6 66
bice, 16 163
rinique, 148 10 1,135
seldorf, 5 2 65
end, 42 15 478

nic—
lington, 1 t. £12
laide, 1 15
ney, 2 2 c. 24

shing Powder—
nsville, 9 t. 8 c. £88

x—
erdam, 10 c. £25
ourne, 8 17

cic Acid—
ourne, 5 c. £11

Carbolic Acid—
Auckland, 10 drs. 30 pks. £33
Hiogo, 1 t. 7 c. 67

Carbolic Acid Crystals—
Rotterdam, 12 cs. £34
Dusseldorf, 160 cks. 1,100

Carbonic Anhydride—
Townsville, 5 cs. £30

Carbon Bisulphide—
Sydney, 50 drs. £25

Caustic Soda—
Fremantle, 1 t. 2 c. £12
Natal, 8 9
Auckland, 5 6
New York, 3 12 35
Algoa Bay, 6 8
Sydney, 1 25
Singapore, 3 4

Chemicals *(otherwise undescribed)*
St. John's, N.B, 3 cks. £17
Auckland, 28 pks. 1 cs. 54
Melbourne, 10 17
Brisbane, 15 kgs. 44
San Juan del Sur, 3 cs. 14
Adelaide, 153 pks. 1 ck. 147
St. John's, Nfd., 19 54
Mauritius, 18 16

Citric Acid—
Brussels, 20 c. £150
Libau, 10 81
Amsterdam, 6 kgs. 47
Hamburg, 2 t. 296
Buenos Ayres, 4 cs.

Coal Products—
Aniline Oil
Rotterdam, 12 dms. £460
Anthracene
Dusseldorf, 159 cks. £1,113
Rotterdam, 107 512
Benzol
Rotterdam, 76 pks. £736
Naphtha
Treport, 50 runs. £150
Naphthaline
Cologne, 3 cks. £26
New York, 77 110
Hamburg, 50 bgs. 19
Paraffin Wax
Auckland, 3 tanks £164

Pitch
Kurrachee, 25 brls. £17
Dunkirk, 524 t. 813
Odessa, 50 cks. 22
Madras, 75 235 runs. 183
Tar
Madras, 20 runs. £15
Bombay, 12 15
Calcutta, 201 105
Toluol
Treport, 25 brls. £70

Copper Sulphate—
Rouen, 75 t. £223
Auckland, 11 c. 9
Lyttleton, 2 4 43
Madras, 1 10 22
Lisbon, 5 70
Bordeaux, 35 554
Treport, 5 82
Paris, 10 155
Rotterdam, 10 4 140

Cream of Tartar—
Melbourne, 3 t. 3 c. £318
Wellington, 14 69
Adelaide, 2 209
Auckland, 1 91
Lyttleton, 12 59
Townsville, 5 25
Melbourne, 15 68

Disinfectants—
Treport, 26 cks. £35
Shanghai, 10 3 cs. 88
Melbourne, 50 drs. 13
St. John's, Nfd., 3 cs. 15
Penang, 100 drs. 35
Calcutta, 2 cks. 12
Natal, 4 pks. 13

Ehrmanite—
Guadeloupe, 12 t. 1 c. £300

Guano—
Genoa, 50 t. £500
Berbice, 30 3 c. 308

Hypophosphite of Lime—
New York, 4 c. £63

Hypophosphite of Potash—
New York, 2 c. £25

Manure—
Cherbourg, 200 t. £900
Copenhagen, 70 2 c. 557
Limon, 70 t. 596
Rouen, 35 150
Bordeaux, 61 18 240
Nevis, 10 105
Jersey, 160 2 1,178
Hamburg, 337 17 2,189
Demerara, 50 500
Gothenburg, 165 13 630

Mirbane Oil—
Hamburg, 8 c. £16

Nitric Acid—
Sydney, 4 cs. £8

Oxalic Acid—
Auckland, 13 c. £18
Yokohama, 20 kgs. 32

Phosphorus—
Antwerp, 1 c. £8
Otago, 23 cs. £145
Invercargill, 1 t. 10 c. 221
Melbourne, 23 cs. 141

Picric Acid—
Melbourne, 13 c. £62

Potash Salts—
Auckland, 5 t. £230

Potassium Chlorate—
Seville, 3 c. £10
Brussels, 10 31

Potassium Cyanide—
Delagoa Bay, 5 cs. £54
Yokohama, 5 26

Salammoniac—
Trebizonde, 16 c. £25
Suez, 1 t. 3 c. 40
Natal, 5 8
Yokohama, 10 cks. 93

Salt Cake—
Antwerp, 150 t. £263
Ghent, 112 196

Saltpetre—
Rio de Janeiro, 5 t. 2 c. £115
Adelaide, 2 43
Auckland, 10 11
Melbourne, 2 1 45
Rockhampton, 5 6
Lisbon. 2 4 45

Sheep Dip—
Brisbane, 12 drs. £14
Natal, 4 t. 1 c. 123
E. London, 455 drs. 228

Soda—
Singapore, 1 t. 13 c. £11
Cape Town, 1 13 6
Natal, 1c 4
Shanghai, 10 3

Soda Ash—
Townsville, 9 t 18 c. £66
Auckland, 10 6 68

Soda Crystals—
Bermuda, 1 t. 3 c. £4
Hong Kong, 1 4
Townsville, 16 3
Fremantle, 10 2 36
Naples, 13 3
Cape Town, 2 8

Sodium Acetate—
Melbourne, 1 t. £18

Sodium Bicarbonate—
Canterbury, 2 t. 10 c. £17
Melbourne, 1 9
Townsville, 10 4
Napier, 10 4
Rockhampton, 1 8
Fremantle, 13 6
Marseilles, 10 72

Sodium Carbonate—
Natal, 2 c. £2

Sodium Hyposulphite—
Hamburg, 60 cs. £51

Sodium Hypophosphite—
New York, 4 c. £50

Sodium Salicylate—
Melbourne, 1 c. £28

Sodium Sulphate—
Ghent, 60 t. £90

Sugar of Lead—
Buenos Ayres, 1 cks.

Sulphur—
New York, 18 c. £17
Lisbon, 250 brls. 211

Sulphur Flowers—
Algoa Bay, 1 t. £14

Sulphur Dioxide—
New York, 6 pks. £80

Sulphuric Acid—
Bangkok, 1 t. 15 c. £10
Singapore, 2 22
Natal, 50 cs. 40

Superphosphate—
Cherbourg, 320 t. £960

Tartaric Acid—
Melbourne, 17 c. £110
Wellington, 5 c. 29
Adelaide, 3 t. 6 c. 382
Algoa Bay, 1 7
Lyttleton, 1 7
Natal, 2 kgs. 10
Fremantle, 3 c. 17

LIVERPOOL.

Week ending March 16th.

Alum—
Valparaiso, 2 t. 15 c. £16
Beyrout, 4 24
Alexandria, 7 10 44
Galatz, 13 5 78
Ibrail, 1 3 7
Melbourne, 1 6
Piræus, 2 10
Toronto, 4 18 24
San Francisco, 15 11 80
Ibrail, 18 5
Marseilles, 1 10 8
Constantinople, 2 10
Bombay, 1 2 6
Volo, 7 10 3 q. 43
Malta, 1 5

Alum Cake—
Calcutta, 10 t. 1 c. 3 q. £29

Ammonium Carbonate—
Sydney, 1 t. 1 c. 2 q. £24
Copenhagen, 11 2 20

Ammonium Chloride—
Adelaide, 1 t. 3 q. £23
Genoa, 2 2 c. 2 37
Melbourne, 12 1 14
Sydney, 1 1 23
New York, 7 10 158

Ammonium Sulphate—
Valencia, 151 t. 5 c. 2 q. £1,600
Venice, 10 2 3 110
Malaga, 50 6 3 550
Baltimore, 50 12 3 560
Hamburg, 50 2 1 550
Bordeaux, 4 19 54
Ghent, 83 19 907
Piræus, 5 14 29
Teneriffe, 1 1 11
Rouen, 26 13 275
Philadelphia, 20 280
Alicante, 20 6 2 214
Genoa, 65 8 2 697
Ghent, 124 13 2 1,316

Antimony Regulus—
New York, 9 t. £405

Bleaching Powder—
Callao, 4 cs. 7 cks.
Genoa, 105
Leghorn, 10
Lisbon, 20 10 brls.
New York, 390 45 10 bxs.
Rio de Janeiro, 6
Alexandria, 5
Boston, 925
Copenhagen, 1
Ghent, 55
Melbourne, 35

Borax—
Rosario, 2 c. 2 q. £5
Rotterdam, 4 t. 4 140
New York, 3 3 5
Valparaiso, 17 ¼ 26

Boracic Acid—
Portland, Me., 1 t. 16 c. 1 q. £68
Hamburg, 11 2 22
Buenos Ayres, 12 24

Borate of Lime—
Rotterdam, 10 t. 6 c. £139

Brimstone—
Trinidad, 7 bgs. £7
Antwerp, 214 30
Cabedello, 10 c. 2 q. 6
Rosario, 32 brls. 35
Boston, 2,001 1,557

Calcium Chloride—
Boston, 9 t. 13 c. £18
Sydney, 5 11
Calcutta, 3 1 7

Carbolic Acid—
Dunkirk, 9 t. £440
Boston, 2 90
Genoa, 9 c. 3 q. 25
Odessa, 4 1 60
Gibraltar, 1 cs. 15
Rotterdam, 4 18 1 250
Vera Cruz, 17 12

Caustic Potash—
Adelaide, 1 t. 2 c. £22

Caustic Soda—
Almeria, 5 brls.
Calcutta, 107 dms.
Catania, 97
Cienfuegos, 20
Genoa, 82
Jaffa, 25
Messina, 136
Palermo, 8
Pernambuco, 110
Santos, 50
Sydney, 30
Galatz, 36
Hamburg, 207 5
Havana, 40 kgs.
Ibrail, 20
Leghorn, 30
Lisbon, 50
Madrid, 35
Nantes, 104
Naples, 40
New York, 1,420 100 25 bxs.
Oporto, 66
Portland. Or., 60
Progresso, 30
Puerto Cabello, 18
San Francisco, 50
Yokohama, 50
Adelaide, 70
Algoa Bay, 2 kgs.
Amsterdam, 10
Baltimore, 170
Barcelona, 50
Batoum, 65
Beyrout, 35
Boston, 375
Cadiz, 16
Carupano, 6
Ceara, 50 10
Cienfuegos, 15
Fiume, 30
Santander, 8 20 29
Seville, 524 40
Smyrna, 18
Valparaiso, 150
Varna, 2

Chemicals (*otherwise undescribed*)
Alexandria, 15 c. £24
Genoa, 16 2 q. 28
Hamburg, 1 t. 14 31
Halifax, 1 cs. 9
Amsterdam, 6 6 77
Beyrout, 8 10 80
Larnaca, 1 6 42

Cobalt Oxide—
Gijon, 2 c. £90

Copperas—
Calcutta, 51 t. 5 c. £102
Constantinople, 3 6
Beyrout, 4 10 9
Alexandria, 39 2 94
Beyrout, 9 7 19

Copper Sulphate—
Galatz, 14 c. 3 q. £11
Tarragona, 41 t. 3 604
Porto Alegre, 12 9
Smyrna, 19 14
Trieste, 18 3 14
Rotterdam, 1 16 25
Galatz, 1 4 2 25
Ibrail, 17 9
Buenos Ayres, 1 14
Marseillcs, 13 12 3 203
Hamburg, 13 7 3 204
Leghorn, 2 15 40
Amsterdam, 7 19 1 114
Bordeaux, 51 17 2 173
Rouen, 240 10 3,660
Venice, 15 2 2 223
Tarragona, 15 219
Marseilles, 5 3 70
Alexandria, 12 175

Guano—
Cullera, 100 t. £997
Valencia, 400 3,987

Magnesium Chloride—
Gothenburg, 2 t. 1 c. £8
Nantes, 4 18 13

Manure—
Teneriffe, 3 t. £34
Nantes, 90 3 c. 216
Barbadoes, 20 190
Antwerp, 29 4 2 q. 137
Havre, 300 5 3 1,001
Bordeaux, 402 14 3 1,373
St Nazaire, 100 1 3 302
Rochefort, 600 2 3 1,779

Oxalic Acid—
Trieste, 1 t. 9 c. 1 q. £35
Barcelona, 4 5 139

Phosphorus—
Trinidad, 2 cs. £13
Buenos Ayres, 2 20

Pitch—
Bordeaux, 81½ t.
Callao, 10 brls.
Cette, 845 t.
Rouen, 1 ck.

Potashes—
Genoa, 12 c. 1 q. £13

Potassium Bichromate—
Seville, 7 c. £12
Pasages, 2 t. 4 c. 1 q. 80
Vera Cruz 1 4 39

Potassium Carbonate—
New York, 16 t. 12 c. £254

Potassium Chlorate—
Fairwater, 4 t. £198
Cobe, 15 658
New York, 20 913
Buenos Ayres, 3 6 c. 184
Philadelphia, 5 228
Havana, 1 10 70
New York, 10 505
Antwerp, 3 136
Hiogo, 7 342

Salammoniac—
Rouen, 1 t. 10 c. £46
Beyrout, 15 c. 26

Salt—
Opobo, 125 t.
Pedro, 7 3 c.
Philadelphia, 65
Portland, Me., 255
Rangoon, 2,210
Rotterdam, 100
Saltpond, 25
San Francisco, 975
Akassa, 16½
Bakana, 20
Buguma, 10
Cameroons, 72¾
E. London, 8 18 c.
Ghent, 50
Algoa Bay, 8
Antwerp, 135
Barbadoes, 50
Boston, 472
Buenos Ayres, 48¾
C. C. Castle, 12½
Cape Palmas, 5
Cape Town, 8 19
Chicago, 100
Halifax, 1,830
Hamburg, 200 bgs.
Isafjord, 139 t.
Kingston, Jam. 5
Mauritius, 10
New York, 90
Landana, 11 3 c.
Loango, 8
Melbourne, 100
Mounte Video, 61
Old Calabar, 35
Opobo, 50
Quillo, 150
Rio de Janeiro, 40 css.
Sydney, 50
Talcahuano, 30
Trinidad, 48
Utaka, 9
Valparaiso, 40 200
Victoria, W. C. A., 11 t.
Wellington, 15 t.

Saltpetre—
Para, 3 t. 10 c.
Cartagena, 5 5 1
Teneriffe, 2 2 2
Manaos, 5 kgs.
Pernambuco, 5 14 1
Rio de Janeiro, 2 16 3
Cabedello. 1 1 1

Salt Cake—
Philadelphia, 90 t. 4 c.

Satinite—
Stettin, 53 t. 8 c.

Sheep Dip—
Cape Town, 3 15
E. London, 4 cks. 925 drs.

Soap—
Natal, 1,019 bxs.
Pt. Natal, 100 css.
Rio de Janeiro, 6
San Juan, P.R., 150 bxs.
Acera, 200
Algoa Bay, 1,198 125 cs.
Axim, 40
Bahia, 20
Batavia, 4,000
Bathurst, 20
Benguela, 50
Benin, 100
Buguma, 4
Cameroons, 50
Bangkok, 2
Barbadoes, 275 50
Belize, 340
Bombay, 505 4
Calcutta, 20 1,00
Cape Town, 1,187
Genoa, 180
Greytown, 245 pks.
Havana, 5 kgs.
Kingston, Jam. 935 bxs.
Livingstone, 100
Mauritius, 2 cs.
Mellilla, 50
Montreal. 1 ck. 6 kgs.
C. C. Castle, 40 bxs.
Conakry, 60
Constantinople, 400
Demerara, 4,339
Dixcove, 50
E. London, 1,210
Gd. Canary, 100
Hong Kong, 100
Lagos, 16
Loanda, 200
Macassar, 2,000
Mpongwe, W.C.A. 40
New York, 140
Old Calabar, 1,000
Opobo, 2,750
Penang, 200
Piræus, 81 bxs.
Pt. Elizabeth, 100
Rangoon, 500
St. Kitts, W.I., 100
St. Lucia, 120
St. Vincent, 100
St. John's, Nfd. 60 10 pks.
Shanghai, 3,460
Sierra Leone, 155
Trinidad, 672
Valparaiso, 701
Warril 100

Soda—,
Boston, 6 cks.

Soda Alkali—
Montreal, 35 brls.

Soda Ash—
Baltimore, 489 tcs. 307 cks
Boston, 241 tcs. 1,216 bgs
Buenos Ayres, 150 cks. 346 brl

Callao, 21 dms.
Lisbon, 15 cks.
New York, 258 tcs. 67 cks.
Toronto, 5
Malaga, 20 brls.
Oporto, 20 cks.
Philadelphia, 225
Rio Grande do Sul, 150 brls.
Rio de Janeiro, 150 brls.
Salonica, 100 cks.
Santander, 20
Sydney, 232
Syra, 100 brls.
Varna, 10 hgs.

Soda Crystals—
Algoa Bay, 25 kgs. 40 cks.
Calcutta, 100
St. John's, Nfd. 10 brls.
Alexandria, 40
Ibrail, 14
Malta, 200
Monte Video, 67

Sodium Biborate—
Rotterdam, 2 t. 12 c. 3 q. £53
Piræus, 5 2 8
Rotterdam, 5 cks.

Sodium Bichromate—
Havre, 1 t. 18 c. 3 q. £46
Salonica, 1 2 1 24
Havre, 5 cks.

Sodium Bicarbonate—
Algoa Bay, 7 kgs.
Antwerp, 22 cks.
Barbadoes, 10 bgs.
Buenos Ayres, 100 28 sks 50 kgs.
Calcutta, 1,500
Callao, 2 dms.
Carthagena, 50 kgs.
Catania, 40
Copenhagen, 5 cks.
Genoa, 8 70 kgs.
Madrid, 100 kgs.
Naples, 20
Sourabaya, 5 cks.
Stettin, 20 kgs.
Alexandria, 42 brls.
Constantinople, 30 kgs.
Fairwater, 50
Hamburg, 140
Matanzas, 5 cks.
Sydney, 190 kgs.

Sodium Bisulphide—
Kurrachee, 6 dms.

Sodium Carbonate—
Lisbon, 2 brls.
Boston, 84
Copenhagen, 2 cks.

Sodium Chlorate—
Antwerp, 1 t. £61
Hamburg, 2 14 c. 166
Antwerp, 20 kgs.
Hamburg, 34 4 cks.

Sodium Hyposulphite—
New Orleans, 12 t. 14 c. 3 q. £92
Vera Cruz, 5 8 49

Sodium Nitrate—
Dunedin, 20 t. 1 c. 1 q. £195

Sodium Silicate—
Carthagena (Spain) 24 cks.
Ancona, 5 brls.
Seville, 100

Sodium Sulphate—
Seville, 1 t. £6
„ 4 brls.

Strontia—
Hamburg, 1 t. 2 c. £10

Sulphur—
Rouen, 5 t. 2 c. £25
Vera Cruz, 3 15 30
St. John's, N.B. 3 5 26

Sulphuric Acid—
Monte Video, 1 t. 10 c. £16
Rio de Janeiro, 1 15 2 q. 30

Superphosphate—
Valencia, 10 t. £40

Tartaric Acid—
Mootreal, 4 c. £26
Alexandria, 2 12

GLASGOW.

Week ending March 17th.

Benzol—
Dieppe, 38 puns. 35 brls. £530

Bleaching Powder—
Kurrachee, 45 c. £24 14s.

Borax—
Wellington, 40 c. £66

Bromstone—
Stettin, 5 t. 12 c. £49

Caustic Soda—
Dunedin, 3 t. 12 c. £38

Chemicals *(otherwise undescribed)*
Dunedin, £50

Coal Pitch—
Calcutta, 11¾ t. £30
Kurrachee, 56 10¾ c. 140

Coal Tar—
Philippines, 2 t. 8 c. £24
St. Johns, N.F., 80 brls. 60 hf.-brls.
Straits, £178
Halifax, 11 t. 8 c. 24
Kurrachee, 28 16 67

Coal Tar Pitch—
Bordeaux, 402 t. 17 c. £615
Valencia, 301½ 345
St. Nazaire, 31 2 47

Copperas—
Kurrachee, 19 t. £37 10s.

Dyestuffs *(otherwise undescribed)*
Dunedin, 7 c. £50

Dyestuffs—
Extracts
New York, 12¾ c. £55
Valencia, 1 t. 6¼ £35 16s.
Halifax, £52

Farina—
Antwerp, 9 t. 16¾ c. £134
Rotterdam, 10 bgs. 16

Fertilizers—
Valencia, 6 t. 17¾ c. £63

Glucose—
Cape Colony, 22 t. 17¼ c. £420

Manure—
Dunedin, 303 t. 16 c. £2,590

Oxalic Acid—
Dunedin, 15 c. £20

Painters' Colours—
Cape Colony, 2 t. ½ c. £52 15s.
Calcutta, £39
Straits, 1 2¼ 21
Philippines, 15 9¾ 182
Adelaide, 7 2 147
Rotterdam, 1 ck. £5 10s.
New York, £43 18s.
Dunedin, 9 17 £241
Wellington, 4 13¾ 133
Colombo, 62

Paraffin Wax—
Stettin, 27 t. 12 c. £1,044
Italy, 44 12¼ 1,587
Dunedin, 15 9 510
Valencia, 7 5½ 307
Turkey, 1 3¾ 43

Phosphorus—
Dunedin, 1 t. 14½ c. £140

Pitch—
Dieppe, 520 t. £920
Sables d'Olonne, 850

Potassium Bichromate—
Antwerp, 212¾ c. £311
Italy, 23 38
Gothenburg, 10 t. 15 338

Potassium Prussiate—
Gothenburg, 1 t. 2½ c. £30

Soap—
Cape Colony, 2 t. 10 c. £45
St. Johns, N.F., 135 bxs. 23 frks.
New York, 47½ c. £35
Halifax, 32½ 25

Soda—
St. Johns, N.F., 8 cks.

Soda Ash—
Philadelphia, 3,014 c. £871
Dunedin, 11 t. 4 79

Sulphuric Acid—
Straits, 4 t. 9 c. £23 15s.
Philippines, £56
Madras, 1 6¾ 7
Kurrachee, 7 10 37

Yarnish—
Cape Colony, 1 t. 18¾ c. £169

White Lead—
Cape Colony, 7 t. 11¾ c. £151
Dunedin, 15 5 309
Wellington, 13 16 317

HULL.

Week ending March 8th.

Benzoline—
Ghent, 25 cks.

Bleaching Powder—
Rotterdam, 1 ck.

Borax—
Rotterdam, 5 cks.

Caustic Soda—
Hamburg, 1 ck.
Konigsberg, 36 dms.
Libau, 18

Chemicals *(otherwise undescribed)*
Rotterdam, 44 cs. 2 cks. 100 pks.
New York, 200
Libau, 10
Konigsberg, 3
Harlingen, 20
Hamburg, 93 5 26
Gothenburg, 29 1
Dunkirk, 15
Christiania, 4 10
Copenhagen, 24
Bergen, 3
Bremen, 15
Amsterdam, 2 15
Antwerp, 6 7 53

Cottonseed Oil—
Antwerp, 1,293 c.
Amsterdam, 120
Christiania, 18
Dunkirk, 96
Flushing, 557
Gothenburg, 120
Hamburg, 4,247
Konigsberg, 100
Rotterdam, 3,033

Dyestuffs *(otherwise undescribed)*
Antwerp, 1 tin.
Boston, 9 cks.
Libau, 1 cs.
Rotterdam, 1
Rouen, 1 cks.

Farina—
Rotterdam, 8 cks.

Linseed Oil—
Antwerp, 14 c.
Bergen, 193
Copenhagen, 34
Christiania, 408
Drontheim, 243
Dunkirk, 2
Hamburg, 1,538
Rotterdam, 572

Manure—
Copenhagen, 900 bgs.
Dunkirk, 317
Ghent, 455
Rotterdam, 100

Ochre—
Hamburg, 9 cks.
Rotterdam, 1

Painters' Colours—
Stettin, 9 cks.
Stavanger, 2 32 drms. 20 pks.
Rouen, 1 cs.
Rotterdam, 38 7 4
New York, 25
Hango, 26 20
Harlingen, 1
Hamburg, 21 15 2
Ghent, 29
Gothenburg, 3 6
Dunkirk, 4 1 2
Christiania, 33 72
Christiansand, 2
Copenhagen, 35 1 2
Bergen, 7 137 497
Boston, 18
Allesund, 20
Amsterdam, 2
Antwerp, 142 20 15 1
Drontheim, 14 332 1

Pitch—
Antwerp, 396 t.
Dunkirk, 192
New York, 500 bgs.

Salt—
Libau, 7 cks.

Tar—
Stavanger, 2 cks.
Hamburg, 10
Drontheim, 5
Bergen, 1

Toluol—
Rotterdam, 25 cks.

Varnish—
Antwerp, 5 cs. 1 ck.
Bremen, 2
Bergen, 1
Copenhagen, 1
Dunkirk, 1 3 cks.
Hamburg, 2 dms.
Harlingen, 5
Rotterdam, 2

TYNE.

Week ending March 12th.

Alkali—
Amsterdam, 291 c.
Christiania, 54
Antwerp, 390

Ammonium Sulphate—
Hamburg, 1,700 c.

Arsenic—
Antwerp, 66 c.

Barytes Carbonate—
Antwerp, 349 c.

Bleaching Powder—
Hamburg, 929 c.
Antwerp, 2,121
Amsterdam, 766
Gothenburg, 1,330
Christiania, 269
Aarhuus, 19
Rotterdam, 142

Caustic Soda—
Hamburg, 255 c.
Antwerp, 63
Amsterdam, 397
Gothenburg, 1,040
Rotterdam, 82
Copenhagen, 210

Litharge—
Amsterdam, 303 c.
Antwerp, 65
Christiania, 21
Rotterdam, 28
Hamburg, 188

Magnesia—
Hamburg, 32 c.

Phosphate Powder—
Horsens, 4,000 c.

Plumbago—
Bergen, 4 c.

Potassium Chlorate—
Amsterdam, 4 c.
Antwerp, 10

Soda—
Amsterdam, 57 c.
Aarhuus, 47

Soda Ash—
Hamburg, 100 c.
Christiania, 51
Venice, 105
Copenhagen, 209

Sodium Silicate—
Rotterdam, 56 c.

Sulphur—
Malmo, 2 c.
Gothenburg, 100 t.
Christiania, 1,400 cwt.

Superphosphate—
Helsingborg, 550 t.

White Lead—
Copenhagen, 21 c.

GOOLE.

Week ending March 3rd.

Benzol—
Rotterdam, 34 cks.

Chemicals *(otherwise undescribed.)*
Rotterdam, 3 cks.

Coal Products—
Calais, 26 cks.

Dyestuffs *(otherwise undescribed)*
Antwerp, 2 cks. 1 drm.
Boulogne, 2

Manure—
Dunkirk, 84 bgs.
Ostend, 238
Ghent, 400

Pitch—
Antwerp, 372 t.

GRIMSBY.

Week ending March 5th.

Pitch—
Antwerp, 54 t.
Dieppe, 60 bgs.

Chemicals *(otherwise undescribed)*
Dieppe, 100 css.
Hamburg, 23 cks. 32 pks.

Coal Products—
Dieppe, 128 cks.

Dyestuffs *(otherwise undescribed)*
Dieppe, 1 ck.

PRICES CURRENT.

WEDNESDAY, March 23, 1892

Prepared by Higginbottom and Co., 116, Portland Street, Manchester.

The values stated are f.o.r. *at maker's works, or at usual ports of shipment in U.K. The price in different localities may vary.*

	£	s.	d.
Acids:—			
Acetic, 25 % and 40 % .. .. per cwt.	7/- & 11/-		
,, Glacial .. .. ,,	50/-		
Arsenic, S.G., 2000° .. .. ,,	0	13	6
Fluoric .. .. per lb.	0	0	3¼
Muriatic (Tower Salts), 30° Tw. .. .. .. per bottle	0	0	10
,, (Cylinder), 30° Tw. .. .. ,,	0	3	0
Nitric 80° Tw. .. .. per lb.	0	0	2¼
Nitrous .. .. ,,	0	0	1¾
Oxalic .. .. nett ,,	0	0	3
Phosphoric, 1750° .. .. ,,	0	1	2½
Picric .. .. ,,	0	0	10¼
Sulphuric (fuming 50 %) .. .. per ton	15	10	0
,, (monohydrate) .. .. ,,	5	10	0
,, (Pyrites, 168°) .. .. ,,	3	5	0
,, (,, 150°) .. .. ,,	1	5	0
,, (free from arsenic, 145°) .. .. .. ,,	1	7	6
Sulphurous (solution) .. .. ,,	2	15	0
Tannic (pure) .. .. per lb.	0	1	2
Tartaric .. .. ,,	0	1	0
Arsenic, white powdered .. .. nett per ton	10	17	6
Alum (loose lump) .. .. ,,	5	5	0
Alumina Sulphate (pure) .. .. ,,	5	0	0
,, ,, (medium qualities) .. .. ,,	4	15	0
Aluminium .. .. per lb.	2s. 8d. to	0	3	2
Ammonia, ·880=28° .. .. per lb.	0	0	3
,, =24° .. .. ,,	0	0	1¾
,, Carbonate .. .. nett ,,	0	0	3¼
,, Muriate .. .. per ton	21	0	0
,, ,, (sal-ammoniac) 1st & 2nd .. per cwt.	35/- & 33/-		
,, Nitrate .. .. per ton	40	0	0
,, Phosphate .. .. per lb.	0	0	10½
,, Sulphate (grey), London .. .. .. per ton	10	5	0
,, ,, (grey), Hull .. .. ,,	10	5	0
Aniline Oil (pure .. .. per lb.	0	0	7¾
Aniline Salt ,, ... ,,	0	0	6¾
Antimony .. .. per ton	45	10	0
,, (tartar emetic) .. .. per lb.	0	1	0
,, (golden sulphide) .. .. ,,	0	0	10
Barium Chloride .. .. per ton	7	10	0
,, Carbonate (native) .. .. ,,	3	10	0
,, Sulphate (native levigated) .. .. .. ,,	45/- to 75/-		
Bleaching Powder, 35 % .. .. nett ,,	7	10	0
,, Liquor, 7 % .. .. ,,	2	10	0
Bisulphide of Carbon .. .. ,,	11	15	0
Chromium Acetate (crystal .. .. per lb.	0	0	6
Calcium Chloride .. .. per ton	2	5	0
China Clay (at Runcorn) in bulk .. .. .. ,,	17/6 to 35/-		
Coal Tar Dyes:—			
Alizarine (artificial) 20 % .. .. per lb.	0	0	8¾
Magenta .. .. ,,	0	3	9
Coal Tar Products			
Anthracene, 30 % A, f.o.b. London .. per unit per cwt.	0	1	2½
Benzol, 90 % nominal .. .. .. per gallon	0	2	0
,, 50/90 ,, ... ,,	0	1	6
Carbolic Acid (crystallised 40°) .. .. .. per lb.	0	0	5
,, (crude 60°) .. .. per gallon	0	1	2
Creosote (ordinary) .. .. ,,	0	0	1
,, (filtered for Lucigen light) .. .. ,,	0	0	2
Crude Naphtha 30 % @ 120° C. .. .. .. ,,	0	0	11
Grease Oils, 22° Tw. .. .. per ton	2	5	0
Pitch, f.o.b. Liverpool or Garston .. .. .. ,,	1	14	0
Solvent Naphtha, 90 % at 160° .. .. .. per gallon	0	1	0
Coke-oven Oils (crude) .. .. ,,	0	0	3
Copper .. .. per ton	46	7	6
,, Sulphate .. .. ,,	14	10	0
,, Oxide (copper scales) .. .. ,,	45	0	0
Glycerine (crude) .. .. ,,	13	0	0
,, (distilled S.G. 1250°) .. .. ,,	45	0	0
Iodine .. .. nett, per oz.	0	0	9
Iron Sulphate (copperas) .. .. per ton	1	12	6
,, Sulphide (antimony slag) .. .. ,,	2	0	0
Lead (sheet) for cash .. .. ,,	12	5	0
,, Litharge Flake (ex ship) .. .. ,,	14	5	0
,, Acetate (white ,,) .. .. ,,	25	10	0
,, ,, (brown ,,) .. .. ,,	17	10	0
,, Carbonate (white lead) pure .. .. .. ,,	20	0	0
Nitrate .. .. ,,	20	5	0
Lime, Acetate (brown) .. .. per ton	6	5	0
,, ,, (grey) .. .. ,,	10	0	0
Magnesium (ribbon and wire) .. .. per oz.	0	2	3
,, Chloride (ex ship) .. .. per ton	2	7	6
,, Carbonate .. .. per cwt.	1	17	6
,, Hydrate .. .. per ton.	17	0	0
,, Sulphate (Epsom Salts) .. .. .. per ton	2	19	0
Manganese, Sulphate .. .. ,,	17	15	0
,, Borate .. .. per cwt.	2	15	0
,, Ore, 70 % .. .. per ton	4	5	0
Methylated Spirit, 61° O.P. .. .. per gallon	0	2	6
Naphtha (Wood), Solvent .. .. ,,	0	4	6
,, ,, Miscible, 60° O.P. .. .. .. ,,	0	4	10
Oils:—			
Cotton-seed .. .. per ton	19	10	0
Linseed .. .. ,,	20	0	0
Lubricating, Scotch, 890°—895° .. .. .. ,,	7	5	0
Petroleum, Russian .. .. per gallon	0	0	4½
,, American .. .. ,,	0	0	5½
Potassium (metal) .. .. per oz.	0	3	7
,, Bichromate .. .. per lb.	0	0	3¾
,, Carbonate, 90% (ex ship) .. .. .. per ton	18	10	0
,, Chlorate .. .. per lb.	0	0	7
,, Cyanide, 98% .. .. ,,	0	2	2
,, Hydrate (Caustic Potash) 80/85 % .. per ton	22	10	0
,, ,, (Caustic Potash) 75/80 % .. ,,	21	0	0
,, ,, (Caustic Potash) 70/75 % .. ,,	20	15	0
,, Nitrate (refined) .. .. per cwt.	1	2	6
,, Permanganate .. .. per cwt.	3	10	0
,, Prussiate Yellow .. .. per lb.	0	0	10¾
,, Sulphate, 90 % (ex ship) .. .. .. per ton	9	15	0
,, Muriate, 80 % (do.) .. .. .. ,,	7	17	6
Silver (metal) .. .. per oz.	0	3	5¼
,, Nitrate .. .. ,,	0	2	10
Sodium (metal) .. .. per lb.	0	3	4
,, Carb. (refined Soda-ash) 48 % .. nett per ton	6	2	6
,, ,, (Caustic Soda-ash) 48 % . ,, ,,	5	5	0
,, ,, (Carb. Soda-ash) 48% .. .. ,, ,,	5	7	6
,, ,, (Carb. Soda-ash) 58 % .. .. ,, ,,	6	5	0
,, ,, (Soda Crystals) .. .. .. ,, ,,	3	9	0
,, Acetate (ex-ship) .. .. ,,	16	15	0
,, Arseniate, 45 % .. .. ,,	10	10	0
,, Chlorate .. .. per lb.	0	0	7½
,, Borate (Borax) .. .. nett, per ton.	30	0	0
,, Bichromate .. .. per lb.	0	0	2¾
,, Hydrate (77 % Caustic Soda) (f.o.b.) nett pr. ton 10 ton lots	11	10	0
,, ,, (74 % Caustic Soda) ,, ,, ,, 10 ton lots	11	10	0
,, ,, (70 % Caustic Soda) ,, ,, ,, 10 ton lots	10	10	0
,, ,, (60 % Caustic Soda) .. ,, ,, 10 ton lots	9	7	6
,, ,, (60 % Caustic Soda, cream) (f.o.b.) ,, 10 ton lots	9	2	6
,, Bicarbonate .. .. ,,	6	12	6
,, Hyposulphite .. .. ,,	7	15	0
,, Manganate, 25% .. .. ,,	9	0	0
,, Nitrate (95 %) ex-ship Liverpool .. .. per cwt.	0	9	3
,, Nitrite, 98 % .. .. per ton	30	0	0
,, Phosphate .. .. ,,	15	10	0
,, Prussiate .. .. per lb.	0	0	8
,, Silicate (glass) .. .. per ton	5	7	6
,, ,, (liquid, 100° Tw.) .. .. .. ,,	4	5	0
,, Stannate, 40 % .. .. per cwt.	3	5	0
,, Sulphate (Salt-cake) .. .. per ton.	1	17	6
,, ,, (Glauber's Salts) .. .. ,,	1	15	6
,, Sulphide .. .. ,,	7	15	0
,, Sulphite .. .. ,,	6	12	6
Strontium Hydrate, 100% .. .. ,,	8	10	0
Sulphocyanide Ammonium, 95 % .. .. per, lb.	0	0	7¼
,, Barium, 95 % .. .. ,	0	0	5
,, Potassium .. .. ,	0	0	7¾
Sulphur (Flowers) .. .. per ton.	10	0	0
,, (Roll Brimstone) .. .. ,,	8	0	0
,, Brimstone: Best Quality (nominal) .. ,,	6	10	0
Superphosphate of Lime (26 %) .. .. ,,	2	7	6
Tallow .. .. ,,	26	10	0
Tin (English Ingots) .. .. ,,	92	10	0
,, Crystals .. .. per lb.	0	0	6¾
Zinc (Spelter) .. .. per ton	21	0	0
,, Chloride (solution, 96° Tw.) .. .. ,,	6	15	0

THE

HEMICAL TRADE JOURNAL

AND

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CHEMICAL WORKS AND THEIR CHARACTERISTIC ODOURS.

A CASE of more than ordinary importance was heard last week before the Lord Chief Justice and a special jury at the Manchester Assizes. As will appear in another column, Messrs. Levinstein & Co., Limited, manufacturers of aniline and other dyes, appeared to answer an indictment of causing a public nuisance, the result of manufacturing certain products at their works situated at Blackley, on the outskirts of the city.

We say that this is a case of more than ordinary import- ance for two reasons. First, on account of the clear summing up of the learned judge, and, second, the celerity with which the jury came to a verdict. The hearing was unusually lengthy, and a large number of witnesses were called to prove the existence of the nuisance. There is no doubt but that every chemical works, and, in fact, works of many other kinds, possesses an odour peculiar to itself; but, as the learned judge pointed out, "the law does not lend itself to the wishes of the fastidious." "There must," he said, "be something more than a mere casual or slight interference;" and this we presume to be the opinion of the intelligent lay mind. It is not an uncommon thing nowadays for persons living near large industrial establishments to complain of what they call a "nuisance," or "an abominable stench," and this being one of the things which cannot be well put down in black and white, appeals more to the passions of antagonists than any other charge that can be brought against manufacturers. The Lord Chief Justice has taken a sensible view of public meet- ings. He said, "Public meetings are as the idlest wind in a matter of this kind: you have no right whatever to hear any- thing about them." We know of many instances where charges of a very similar kind to the one in question have been brought against manufacturers, but in nearly every instance the complaints have been traced to political or to municipal agitation, and to grievance-mongers generally.

In a case of this kind the Corporation or other local governing body is generally placed at a disadvantage. It is memorialised and egged on by the complainers to prosecute. If they do not take proceedings they are charged with neglect- ing the interests of the ratepayers, and more often than not they are compelled against their will to institute proceedings in order to wash their hands of the matter. If the com- plainers in cases like this were made to bear the cost of legal proceedings personally, their noses would perhaps be less sensitive to the odours of which they complain. In the present case the Corporation rates are increased by these very heavy expenses, and Messrs. Levinstein & Co., Limited, will be many hundred pounds out of pocket by reason of the action, which, although they have gained, has cost them a considerable sum of money, and it cannot be very pleasant for the complainers to be plainly told by the jury that their evidence was not believed.

THE EMISSION OF NOXIOUS GASES.

AT the annual meeting of the Liverpool section of the Society of Chemical Industry, which will be held at the University College on Wednesday, April 6th, Mr E. Carey will introduce a discussion on Mr. A. E. Fletcher's paper on "Modern Legislation in Restraint of the Emission of Noxious Gases from Manufacturing Operations." This discussion will touch upon an important subject, especially as there is a Bill in Parliament bearing upon this matter, and should be of a most interesting character. In addition to opening the discussion, Mr. Carey will also move the following resolution :—"That a Committee, with power to add to their number, be appointed by this section to confer with the Parliamentary Committee of the Council of the Society, to consider how the Alkali Works Regulation Act may be amended in the interest of the public and without injury to the manufacturer." What the upshot of amending the Alkali Works Regulation Act will be it is hard to say ; but the Bill before Parliament in regard to the pollution of the atmosphere with smoke might with advantage be subjected to the same process of treatment suggested for the Alkali Acts.

Legal Intelligence.

MANCHESTER ASSIZES.

NISI PRIUS COURT.

(Before Lord Chief Justice Coleridge and a Special Jury.)

CHEMICAL MANUFACTURERS INDICTED.

THE QUEEN V. LEVINSTEIN & CO., LTD.

In this case, which came on for hearing on Friday, last week, Mr. Addison, Q.C., M.P., Mr. Smyley, Q.C., and Dr. Pankhurst appeared to prosecute under a Crown indictment, and Mr. Gully, Q.C., M.P., Mr. C. A. Russell, and Mr. Parry appeared for the defendants, who are chemical manufacturers at Crumpsall.

Mr. Addison, in opening the case, said he and counsel with him were instructed on behalf of the Corporation of Manchester. Although the present proceedings were not in the form usual with that court and usual with a special jury, although they were not in the form of a civil action, but were in the form of criminal proceedings, in substance they were in the nature of civil proceedings taken by a public body for the protection of the ratepayers. That being so, the Corporation did not in the least degree seek by damage or by costs to injure the defendant company. All they desire was to lay the case before the jury, and it would be for them to say whether the defendants were guilty or not. If they found that they were, such a course would be taken as his lordship might think right to put an end to the nuisance which was found to exist. Although the counts in the indictment were numerous and lengthy, the only substantial charge in them was as to whether the defendants did or did not in the carrying on of their business create a nuisance to the neighbourhood in which their works were situated. If they carried on their business in such a way as to render the enjoyment of life and of property in Crumpsall less comfortable than the residents there were entitled to have these things, that would amount in law to a nuisance. That was, in fact, the simple issue before the jury. Messrs. Levinstein's works were situated in the valley at Crumpsall, and the operations carried on there were connected with the general manufacture of chemicals and also with the making of colours. The particular matter of which complaint was made seemed to be the introduction of a new process at the works about May or June, of last year. Since May, 1891, a large number of inhabitants had complained that there came from the defendants' works an intolerable stench which they could not by any means get out of their houses. The people held public meetings at which complaints were made of the stench, and finally these complaints became so loud and so oft-repeated, that the City Council urged the matter on the attention of the Nuisance Commtitee of the Corporation. The Committee found that many of the inhabitants of Crumpsall went so far as to say that the stench was simply intolerable, making the habitation of their houses almost an impossibility when the wind was blowing in a certain direction from the works of Messrs. Levinstein. On the other hand, the Committee had to deal wtih the interests and rights of Messrs. Levinstein, who were carrying on an important business, and were ratepayers to the Corporation. The charge against Messrs. Levinstein seemed to have been that the stench produced irritation of the mucuous membrane, and affected the eyes, the throat, and the respiratory passages. It led to dryness of the throat, and sensation as of suffocation, and in some cases, brought on a sharp, dry cough. Later on it produced irritation of the digestive tract, left a bad taste in the mouth, took away the appetite, and caused nausea, vomiting, and sometimes diarrhœa. There had been a statement made to the effect that some accidents had occurred at the works which had caused the smells. If that were so, of course the Corporation would not have taken these proceedings, but he could show, he believed, that the nuisance had no caused. But what was really the serious part of this case was in the distillation of a product called naphthylamine, and th in regard to this seemed to have commenced suddenly in June of last year. So far as he understood it, Mr. Levin seemed to be a very able and progressive man in his busines producing his own naphthylamine. It was the foundation colours which he produced in his trade, and up to a certain ti imported it in a solid state from Germany, but he doubtless he could produce it better himself and save a considerab by so doing. The process of manufacture he would briefly d He understood that Mr. Levinstein took crude naphthalene in a crystal form, and he proceeded by means of heat to dis obtain a purer naphthalene. The substance so produced w when cold with nitric acid and a small quantity of sulphuric that produced nitro-naphthalene. At that point they ca manufacture of what was called naphthylamine. The nitro-na was mixed with iron filings and a certain quantity of hy acid and water, and the mixture of these things naphthylamine. The product seemed to be a most offen but it required to be further distilled, and it was in th of distillation that the nuisance arose. The substance w in large retorts and super-heated steam up to a temp 750 degrees Fahr. was applied to the retorts. Thereupon was given off which was passed into a worm. The worm lower degree of heat, say 250 degrees, and thus condensati vapours was produced. The liquor was then discharged into and it was afterwards solidified until it became the product dared say at one time Mr. Levinstein used to purchase. Th whom he should call would say that an abominable stench this process of distillation, and the stench possessed mos qualities. It travelled enormous distances, and when dilute it was more offensive than when it was solidified, and if o a little of it, it seemed as if one could not get rid of it. Un there was no nuisance of which complaint could be made unt June, 1891. The nuisance which was produced was a very and unless the witnesses whom he should call were fanciful in any way bear out what he said, the nuisance was one w be abated, and the process must, if it was to be carried o ducted in such a way as to produce no nuisance. Mr. stated there was a tannery and a Corporation tip in the neigh and also a match manufactory, and it had been suggested them the nuisance proceeded. If that was so, however, i in a slight degree, and the inhabitants had not complained o

Evidence was then called.

Mr. Percy Glass said he resided at Delaunay-road, High sall, and had resided there for about nine years. He never n offensive smell until the early part of June last year. Mess stein's works were near at hand, and had been considerabl in recent years. Noticing a smell on one occasion about th had mentioned, he looked out of his house and saw a lurry going to the defendants' works. He conlcluded then that h a whiff from the lurry, but he afterwards came to the conc he had had a whiff from the works. The smell he found f vation was intermittent, and was of a most nauseating char experienced it when the wind blew from the direction of the works. After the smell had disappeared from the atm remained about one's beard and moustache for hours. Wi menced taking notes of the nuisance on the 20th June, result of these observations he gave On one occasion he home to dinner. The stink pervaded his dining-room, even doors were closed, and quite overpowered the smell of h On other days he found the stink most offensive. He ma representations with regard to the nuisance, and on the 26 public meeting of the inhabtants of Higher Crumpsall w consider the matter. Subsequent meetings were held in of the neighbourhood. As illustrating the character of th he said that his servants were in the habit of drying sm such as pocket handkerchiefs, in the garden. On one o went to Glasgow and took a clean pocket handkerchief luggage and placed it in his pocket. When he reached the he took out his handkerchief and was rather surprised to fin smell that he complained of when at Crumpsall.

Mr. Gully: I should have thought that carrying bad smells and the Clyde was like carrying coals to Newcastle. (Laugh

The Witness : I thought a few minutes, and then I fo had liberated the stink by opening my pocket handkerchief.

The Judge: Then you absolve Glasgow from the smell?

Witness : I do, my lord. (Laughter.) Proceeding, the w that going to business in the morning he had smoked a lar order to overpower the smell, but had been unable to get ri his nostrils and throat. The smell as near as he could desc like a mixture of bad gases and night soil over which chlor had been thrown.

ined by Mr. Gully, the witness said that at one of the
he might have asked whether they were going to tolerate
dicate coming to Crumpsall and poisoning a thousand in-

You made it a national question then. You did not
English workmen were employed there.
o further questions the witness said the nuisance of which
d was not caused by the Corporation tips or by other
eighbourhood.
Dearden, surgeon, Crumpsall, said he had experienced the
l coming from the works of Messrs. Levinstein, perhaps
and on some of those days had made notes with respect to
œtid, sickening smell. He had known instances in which
ndigestion, nausea, vomiting, and diarrhœa.
ined by Mr. Gully, he said the Corporation had a tip at
The odour from it was not pleasant, but it was altogether
the stench arising from the naphthylamine. There were
s near the premises of Messrs. Levinstein, and, close by,
lled from the river Irk. There was a smell from the
n it was cleaned out every fortnight, but it was a totally
l from that emanating from the chemical works when this
eing carried on. He was of opinion that the death-rate
st year in Crumpsall than in the preceding twelve months.
however, attribute that to the nuisance. The nuisance
an ill effect upon the people, who suffered from the fumes.
ammond, residing in Dover-street, Crumpsall, said the
ggestive of rotten eggs.—(Laughter.) The smell was
nd sometimes he did not notice it for months together.
r, depended upon the direction of the wind. The stench
ole, and got into houses even when the doors and windows

enhalgh, Cleveland Road, Higher Crumpsall, said he had
k and ill in consequence of the smell. He had built some
rumpsall, and he had since regretted it.
een, residing at Blackley, said he was foreman at a tannery.
ie smell all over Blackley when the wind came from the
me from Levinstein's works, and nowhere else.
urst: Do you call it a smell or a stink?
It is a stink and a bad one. (Laughter.) I have never
g like it in my life, it effects my head and eyes.
urst: It does not come from your tannery works?
No. Ours is one of the healthiest businesses in the world,
Laughter) We live longer on this earth and last longer
dead, according to Shakspere, and he knew something.—
The skin gets well tanned, according to Shakspere.—
ghter.)
Morgan, timber merchant and match manufacturer, said
re in Crumpsall Vale. He experienced these smells when-
s a southerly wind. There were two distinct smells—a
uretted hydrogen, like rotten eggs, and another smell he
cribe. It was a strong and, if the Court could understand
smell. (Laughter.)
: Something altogether new in the way of smells?
on: Yes, my Lord, introduced from Elberfeld-on-the-
this new introduction in the way of smells that we object

Whiley, superintendent of the Cleansing Department of the
gave evidence as to the size and character of the Corporation
sall. He said it came under the control of the Corporation
was enlarged. It was used for tipping what was called

to Mr. Russell, the witness said the refuse placed on the
a slight quantity of night-soil. He objected to tips of any
s tip was the least objectionable of any under his control.
lantine, master of the Crumpsall Workhouse, said that
is close to Messrs. Levinstein's works. He noticed the
lly on the 7th and 31st of May last year. The smell made
to vomit, and it had the same effect on members of his
inmates of the workhouse had complained about it, and
ed written reports about it from the lady superintendent
The witness gave results of observations made by him on
ions, by which he located the smell as coming from Messrs.
works.
Sykes, resident medical officer at the Crumpsall Workhouse,
h was a great trouble there. Frequently they had to close
l windows, and that did not always keep out the smell.
was concerned, it caused nausea, slight headache, and loss
The workhouse contained 1,140 inmates. There were
smells, one of a more irritating character than the other.
Smith, resident medical officer at the Workhouse Infirmary,
the evidence of the last witness.
int the jury intimated that they had heard quite enough of
of resident witnesses, and the Judge remarked that he
with them.

Mr. Addison said he would call one or two witnesses from another part of the district.

Mr. Richard Wood, residing at Blackley, was asked by Dr. Pankhurst to describe the smell which he had noticed.

Witness: I do not know whether you have ever tasted a bit of copper in your mouth, but the smell is something like that taste.—(Laughter.)

Dr. Pankhurst: Has it affected your health?

The witness (who is a stout, fresh-complexioned gentleman) replied, amid the laughter of the court, that it had.

Mr. Gully: You are a specimen of the wreck to which people are reduced by these smells?—(Laughter.)

The witness replied that his eyes were affected by the process carried on at the defendants' works. His wife had been made sick by the smells as recently as the previous day.

Mr. R. Wardleworth, a resident at Blackley, spoke to nuisance caused by the smell.

Dr. Stevenson, London, medical adviser to the Home Office, &c., gave evidence as to the process of making naphthylamine. He said that in an impure state it had a decided smell—a smell which had been described as disgusting and of a fœcal nature. It was a very unpleasant odour, and was more especially observable when a small quantity of the vapour was distributed in the air. It would travel very far, and if a minute quantity got upon the clothes or person it remained for a long time. All the plant he saw at the defendant's works was excellent; he had nothing to complain of with regard to the appliances.

Mr. Addison: When minimum quantities escape do they produce the degree of smells and difficulty which we have heard of?

Witness: I think more than a minimum quantity must have escaped to produce what is described by the witnesses, if it is produced from these works?

Mr. Gully: The process is carried out in the newest form it could possibly be?

Witness: I know of no better, as far as I have seen it. In reply to further questions by Mr. Gully, the witness said when he visited defendant's works he saw a quantity of the product stocked there and in process of manufacture. He noticed a smell of naphthylamine, but nothing he could call a nuisance. He was there on a cool day.

Dr. Bailey, said he had visited the defendant's works on several occasions. He described the manner of manufacture, and said the smell was given off in the process of distillation. Naphthylamine had a characteristic odour of its own which could not possibly be mistaken. The descriptions given by the witnesses were very apt descriptions.

Mr. C. Estcourt, city analyst, said he visited the defendant's works on the 26th November last. He noticed the smell of which complaint had been made when about 80 or 100 yards away. The smell was not so pronounced as some of the witnesses had stated. He gave evidence as to other visits paid by him to the works and to the neighbourhood, and to noticing the smell.

This concluded the case for the plaintiffs.

The Judge said before Mr. Gully addressed the jury he wished to tell them what he had always thought was the best description of what they must find, and of what must be proved in such cases before they could give a verdict for the plaintiff. There had been all sorts of cases, but an excellent description of what ought to be proved before a case of nuisance was established was laid down by a great authority—Lord Justice Knight Bruce. Lord Justice Knight Bruce, in a case of this sort, delivered his judgment in this way. He observed that the law said *Lex non favet delicatorum votis*, which meant that the law did not lend itself to the wishes of the fastidious. There must be something more than a mere casual or slight interference. Lord Justice Knight Bruce said the question was "whether the inconvenience ought to be considered as one of mere delicacy or fastidiousness, or as an inconvenience materially interfering with the ordinary comfort physically of human existence, not merely according to elegant or dainty modes and habits of living, but according to the plain, sober, and simple notions among English people. In other words, 'Will the proceeding abridge and diminish, seriously and materially, the ordinary comforts of existence to the occupiers, whatever their rank or station, or whatever their state or health may be?'" The jury must find that what was done in this case would be to cause such a nuisance, supposing they believed the evidence that had been placed before them, before they could find a verdict against them. That was what he should lay down to the jury.

Mr. Addison: That almost follows Lord Mansfield, if I may say so.

The Judge: I have got Lord Justice Knight Bruce, and that is enough for me. Proceeding, his Lordship said it was in evidence that this was the one place in England where this particular product was manufactured, and the object of these proceedings was to put this manufacture down, because it was admitted that the machinery for carrying on the process was as perfect as it could be. Therefore it meant that if the jury found for the plaintiffs the manufacture was to cease.

Mr. Gully, Q.C., then addressed the jury for the defence. He said the matter was of vital importance to his clients, and of vital importance to a large and important trade which was being introduced into this country. It was impossible to conceive, when they came to examine the evidence in support of the case for the plaintiffs, whether it be that of the people who resided in the neighbourhood, or of the scientific witnesses who had been called, a case which stood on slighter grounds. The prosecution was a criminal one. The defendants had a right to carry on their business in England like other people, and without interference, if they did not commit a distinct breach of the law. If they committed a breach of the law and caused a nuisance in the sense the Judge had defined, then, like other people, they must be punished for it. But they were not to be punished for a criminal offence if they were carrying it on lawfully and with every possible care. The jury would have no sympathy with the orator who made a speech to the people of Crumpsall and denounced the defendants as a German syndicate, and urged that the business should be got rid of because there was so much of the foreign element about it. That was so much nonsense, but it was the sort of thing which went down sometimes, and created a prejudice amongst people and made it easy to procure persons in a district to come and say that works of this kind were a nuisance. Mr. Levinstein was a skilled German chemist. He had brought his skill to England, and instead of establishing works in Germany had established them here, and so had introduced what was practically a new trade, finding employment for 150 English workmen, and sustenance for themselves and their families. It would not be a light thing to stop those works; certainly it would be a loss to the workmen, and he should hardly have expected to see a Lancashire man go into the box and suggest that works of this kind were a nuisance because they were established by Germans, seeing that they brought employment for Englishmen which employment would otherwise have gone to Germany. They had had it in evidence that the works were excellently conducted; everything that money could do was done to carry them on in the best possible way. It was said that a smell escaped from these works, and that a certain characteristic smell attached to them. The smell, he suggested, was rather that of naphthalene, which was not particularly unpleasant, though it might, nevertheless, be a smell that some people disliked. He should call evidence to shew that the statements as to the nuisance had been very much exaggerated. Learned counsel criticised the evidence called on the other side, and said the witnesses from the neighbourhood had not gone to Messrs. Levinstein and made a complaint, and so afforded them an opportunity of seeing what ground there was for it, but they went about holding meetings, taking notes, and getting up a case for a prosecution. He (Mr. Gully) thought he should be able to prove that no satisfactory case had been made out on which the jury could convict Messrs. Levinstein of a breach of the law.

Mr. I. Levinstein was the first witness called for the defence. He said, in examination by Mr. C. A. Russell, that he was the managing director of the defendant company. He studied chemistry at Berlin, was a Fellow of the German Chemical Society, Vice-President of the Manchester Society of Chemical Industry, a director of the Manchester Chamber of Commerce, and chairman of the Chemical Section of that Chamber. He had had a long experience of chemical manufacture, and had been engaged for twenty-seven years in the manufacture of chemicals in this country. He established a chemical manufactory at Blackley as long back as 1865, and in 1885 he moved his works to their present site. They had since been enlarged. He commenced to manufacture naphthylamine about May, 1891. The first attempts were made in April of that year, but they were not successful, and the first naphthylamine was really made by him on May 16. Prior to April and May of that year, however, he had used the product in large quantities, indeed in larger quantities than he was using to-day or had been using during the last six or twelve months.

The Judge: What is it used for?

Witness: For manufacturing colouring matters exclusively.

Continuing his evidence, the witness said he had used naphthylamine all the time he had been at his present works. He used it also for many years before he went to those works. Previous to making it he purchased it in Germany, and about ten or twelve years ago he had as much as 20,000lb. of the product stored on his premises. There would be always from 3,000lb. to 6,000lb. in stock, so that the storage of this material was nothing new. He had made no change in the method of storage. In using the product for dyes they had to reduce it to the liquid form. In the process of reduction the smell was that of naphthalene, the odour of naphthylamine not being present at all. He had taken taken gentlemen who were concerned in both sides of the present case over his works, and had placed them in situations where the wind blew from his works, in order to give them an opportunity of ascertaining if there was any escape of the smell of naphthylamine, and they had been unable to discover a nuisance.

Mr. Russell: In your opinion the theory that the smell of this material would become worse and worse the further you get away is absurd?

Witness: It is ludicrous. Continuing, he said his works visited by Dr. Tatham, the medical officer of health for M and the inspector of nuisances had been there on several Dr. Tatham had been there since the complaints had been m saw Dr. Tatham in court on the previous day.

Mr. Addison: We did not call him, but we would have c one if my friends had wished it. We did not call Dr. Tatha inspector because there was a desire to curtail the plaintiff's e

The Judge: But you are prosecuting these people. You medical officer of health present, and you say you would ca anyone your friends wished?

Mr. Addison said they had called a number of experts.

In answer to further questions by Mr. Russell, the witnes cost of the works and plant was about £80,000., about 8 a built upon.

Cross examined by Mr. Addison, the witness said it his theory that no smell could come from his works. If the were confined to the smell of fæcal matter, he said that smel character did not come from his works. If the question general smells or particular smells, he said they had smell co the works, and that smell was produced by the distillation of n No smell of fæcal matter could escape from his works. The manufacturing the product of naphthylamine was not carrie where else in England. It was carried on in half a dozer Germany, he believed in one place in Switzerland, and in Elberfeld-Barmen there was a naphthylamine works in the ve part of the town, and if there was any nuisance arising fro might be sure the German Government would have closed long ago. He was not aware that the Swiss Government h a works where this product was manufactured at Ba literature upon the subject stated that the substance gave o smell. In its impure state it did emit a kind of fæcal odour, pure state, as it had been made for the last two years, did no such an odour.

Mr. Alfred Fletcher, chief inspector under the Alkali Ac visited the defendants' works, in order to inspect them, a times. They were constantly visited by Mr. Carpenter, th inspector, who reported to him from time to time. The w new, well constructed, in perfect repair, and properly o Assuming the works to be properly conducted no nuisance c from the processes carried on there. He had been asked if observe any smell, and had approached the works from all direc found nothing which could explain to him the complaints whi told had arisen with respect to them. The only odour that was present was that of napthalene, which was present in consider tity. That smell was such as would be experienced if a pu opened at a gasworks. It was not an unhealthy smell. Th involved in the manufacture of naphthylamine was a very imp nationally. It was important that it should be retained in thi Owing to the skill and energy of the German chemists the ma of dyes representing about £3,000,000 was taken away fro we were very much indebted to Mr. Levinstein and his Germ for their efforts to establish the trade here and retrieve our The materials of the manufacture existed in this country invention relating to its production was an English invent had been carried away to Germany.

Mr. R. F. Carpenter, inspector under the Alkali Act for L cashire and Yorkshire, said in his visits to the defendant's w they had been fairly numerous—he had never experienced from the naphthylamine department. In 1891 he paid 17 vi works. He had visited the works in company with Dr. Ta medical officer of health. He had approached the works fro directions, and knowing that complaints had been made, he ha tried to ascertain from what cause they proceeded, and at wha the smells could be noticed. He had noticed the tip near the Union Workhouse, and had frequently experienced the smell It had caused him to retch. As he approached the defendan and left the tip behind the sensation passed away. He had on smells on two occasions coming from the works. On one occ smell was distinctly that of crude naphthalene, and on the othe he noticed an aromatic odour. He did not know the smell o lamine. He regarded the tip to which he had referred with because he was unwilling to believe that the Corporation would continue. He had not the slightest doubt that the unpleasan had found arose from the tip.

Mr. Carter Bell, public analyst for the county of Chester, th of Salford, and other places, said the process of filling the buc the product had been going on almost every time he had works. The process was going on when he visited them with on the preceding Thursday. The odour of naphthalene per works generally and overpowered everything else. It was no smell. The sewage from one of the workhouses at Crumps by the works and emptied itself into the river Irk. He had papers at the point where the sewage emptied itself into the

found that sulphuretted hydrogen was given off there. The tip which had been referred to was certainly very offensive, and he was surprised the Corporation should allow it to exist.

Dr. Julius Dreschfeld said no offensive odour was given off which could be discovered at any distance. When the substance evaporated it smelt strongly, but only when close to it. For the purpose of experiment he allowed some of the liquid to spurt from the worm on to his moustache and coat. He subsequently went to his club, and asked particularly whether any unpleasant odour could be detected. No one, however, noticed it except himself.

Mr. W. H. Bramhall, merchant and yarn agent, residing at Willow Hill, Crumpsall, said that in July last year, he noticed a chemical smell, more like chlorine than anything else. He could not say positively that it came from the defendants' works.

Mr. G. Jackson, stationmaster at Crumpsall; Dr. Reynolds, consulting physician to the Manchester Workhouse; Mr. J. E. Williams, and Mr. F. Butterworth, residents in the neighbourhood of the defendants' works, said that no nuisance was experienced by them from the processes carried on there.

The jury intimated to the Judge that they had heard sufficient residential witnesses.

The Judge: The difficulty I have is this. This matter is vital to the defendants, and they would have good ground for complaint if I stopped their case before they had called all the persons round about who had not smelt this. There is a view upon which you would have a perfect right to stop the case. I do not know whether that is your view.

A juryman said they did not wish to stop the case.

The Judge said it was for the plaintiffs to make out their case. This was a criminal prosecution, an indictment, and it did not mean simply one man against another, or compensation in damages. It meant putting down these works, and therefore going far towards ruining the defendants. If, consequently, the jury still thought the defendants were wrong, he did not think he could stop the case.

A juryman: We will leave it to your Lordship.

The Judge: No, I cannot in a case where it is vital, as in this case. This is an indictment. There are no costs, and the whole expense is upon the defendants. We see what animates the plaintiffs; it is these public meetings. Public meetings, as I shall have to tell you afterwards, are as the idlest wind in a matter of this kind. You had no right whatever to hear anything about them. The question is simply, is it made out that this seriously interferes with the life and comfort of the neighbourhood—not of any individual, but of the whole neighbourhood? Not a creature, as far as I am aware, has been called to say he has suffered in health; not one solitary creature has been called from the Prestwich Union, which is between the Manchester Union and the works—not one word has been heard from them; and how can I possibly, when you have admitted that you have still a doubt about it, stop such a case as that?

A juryman said they understood that in the first place they had to find that a nuisance existed, and secondly that it came from the defendants' works.

The Judge: Yes; it is for the plaintiff to make that out to your satisfaction. It must be something which seriously interferes with life and comfort. Not one human being has left his house, and not one human being has done anything beyond what you have heard.

Mr. Addsion said they were prepared to call witnesses from the Prestwich Union, but they were stopped. They had a great mass of evidence.

The Judge: You did not intimate that.

Dr. Pankhurst said he was about to call a witness from the Prestwich Union when they were stopped.

The Judge said if that were so he had made an observation which, it appeared, was not warranted.

James Martin, residing in Cleveland-road, Crumpsall, said he had never found any discomfort from the defendants' works. He had never had better health.

The Judge: Where would Manchester be, or where would England be if evey smell were the snbject of indictment?

Mr. Russell intimated that the defendants had necessarily a very large number of residential witnesses.

The Judge: I cannot presume to give any advice, but if I were you I should bring every single one, because, this being a misdemeanour, it does not end here.

A long array of witnesses resident at Crumpsall, Blackley, and the district were then called. They said that, though they had occasionally experienced smells, they were not of an unpleasant nature, and they had found no ill effects from them. One gentleman, indeed, assured the Court that the smell he had noticed "gave him a grand appetite." (Laughter.)

After the adjournment, Mr. Russell said, it had been decided, on the part of the defendants, though they had still many witnesses prepared to give evidence, not to call any more. The defendants' case was therefore concluded.

Counsel then addressed the jury.

The Judge, in summing up, said that persons coming to live in a great city like Manchester or London, Liverpool or Leeds, must not expect to get all the beauties of a country retreat. They must take the place as it was. The jury must look at the case from a common-sense point of view, and in order to convict the defendants they must be satisfied that if a nuisance was caused it was such a nuisance as materially interfered with the comfort and convenience of life. As to the expressions used at public meetings, which had been referred to in the case, he observed that public meetings were very good things in their way, but cases of this kind were to be determined by sworn evidence, and not by expressions of opinion at public meetings. In regard to the works of the defendants, no suggestions had been made that any carelessness or anything improper in the conduct of them had been permitted by Messrs. Levinstein & Co.; everything was done that could be done to conduct them properly. His Lordship reviewed the evidence at length, and, referring to that given by residents in the locality of the works, said that none of them had stated that they had suffered in health in consequence of these odours of which they complained. Indeed, without wishing to pay any compliments, he considered that the witnesses called for the plaintiffs were fine specimens of humanity, and not at all like persons suffering from fœtid odours. The neighbourhood might not be all that was desirable in point of fresh air, but he was afraid every man in Manchester must take Manchester as it was, for its greatness, it riches, its valuable products, and other things, and must be content to pay something for living in a great centre. Still, that these works were carried on properly was not an answer, because the most valuable manufacture might be carried on with the utmost care and still be a nuisance, and if it constituted a nuisance the law would not allow it to be carried on, however valuable or beneficial to the community it might be.

The jury, after deliberating for two minutes, returned a verdict of not guilty. There was slight applause in court, whereupon his Lordship exclaimed: "Stop! stop! What! in a court of justice? You ought to be ashamed of yourselves."

THE CHEMICAL ANALYSIS OF ALUMINIUM.

By Alfred E. Hunt, Geo. H. Clapp, and James O. Handy.

(Continued from page 214.)

DETERMINATION OF IRON AND COPPER.

1 gm. of aluminium is dissolved in 40 c.c of a mixture of 33 per cent. concentrated hydrochloric acid with 67 per cent. water. When solution has been effected, boil up, dilute with warm water to 250 c.c. and passed sulphuretted hydrogen into the solution, till saturated.

Filter off silicon, sulphide of copper, &c. The copper is separated from the residue and determined by any of the well-known methods. For instance, having obtained the copper in nitric acid solution from the ignited residue in which the silica has been rendered insoluble, the latter solution can be evaporated to dryness, and after ignition the residue of cupric oxide weighed. The copper may also be determined by battery precipitation from a dilute sulphuric acid solution.

The iron, in the filtrate, from the precipitation with H_2S, is estimated by titration (after boiling down the solution to 50 c.c.) by means of standard potassium bichromate. We use stannous chloride to reduce the Fe_2Cl_6 and mercuric chloride to take up the small excess of stannous chloride.

The metallic aluminum is usually obtained by difference in our commercial work, as we find that commercial metal made by electrolysis of alumina dissolved in molten fluoride salts, very rarely contains any solid impurities other than silicon, iron, and copper. In some cases we have found sodium or potassium present, which we have separated and determined as in well-known methods of analysis for the alkalies in fire clays.

DETERMINATION OF ALUMINIUM.

The determination of aluminum in the commercial metal by difference, is only approximate, for not only may there be alkali metals, but considerable amounts of occluded gases present to cause erroneous results, as well as the errors in determining the amounts of silicon, copper, and iron present.

In all important work we determine the percentage of metallic aluminium gravimetrically by precipitation with hyposulphite of soda. The details of the method are as follows:

1 gm. of aluminium is dissolved in about 25 c.c. HCl (35 per cent. strong acid), and evaporated to dryness. It is then redissolved in dilute HCl by boiling, and is filtered from silica and silicon. The filtrate is diluted, warmed, and saturated with H_2S. CuS is filtered off and washed with H_2S water. The filtrate is boiled till free from

H_2S, and made up to 250 c.c. 50 c.c. of this solution are nearly neutralized with NH_4OH. Then 5 c.c. of saturated ammonium phosphate and 10 c.c. saturated sodium hyposulphite are added and the solution boiled till free from SO_2.

Filter and wash with hot water. Redissolve the $AlPO_4$ in dilute HCl, reprecipitate with slight excess of ammonia and a little phosphate and boil.

Filter, wash, ignite in porcelain, and weigh as $AlPO_4$ containing 22·36 per cent. aluminium.

TITANIUM AND CHROMIUM ALLOYS.

Titanium and chromium are added to aluminum to give hardness and resilience to the metal. Chromium gives the best results for hardness in castings. Titanium imparts more toughness and resilience, and is added when the metal is to be worked after being cast.

DETERMINATION OF CHROMIUM-ALUMINIUM ALLOY.

2 gms. of chromium-aluminium alloy are treated in a 5-inch porcelain dish, with about 50 c.c. of 10 per cent. KOH solution. When action has slackened, the solution is boiled up, and finally filtered. The washed residue contains the chromium, together with some silicon, silica, iron, aluminium hydrate and titanium, if present.

Burn off the filter paper in a porcelain crucible; transfer the residue to a large platinum crucible, and treat with 1 c.c. concentrated H_2SO_4 + 5 c.c. HF. Evaporate to SO_3 fumes; add 4 gms. bisulphate of potassium; cover the crucible and fuse, for about twenty minutes, at a low temperature. Finally heat to a high temperature over the blast-lamp, to expel nearly all the free acid. Cool a little, and add sufficient Na_2CO_3 to make alkaline; also a little KNO_3, and fuse.

Dissolve in hot water and filter. Filtrate contains all the chromium as chromate, together with some alkali aluminate and silicate.

Decompose the latter by warming the solution with NH_4Cl, and filter.

Reduce the chromium in the filtrate, by sodium sulphite or sulphurous acid, and precipitate the chromium as hydroxide by means of ammonia, as usual.

Re-dissolve the $Cr_2H_6O_6$ in HCl; dilute and re-precipitate with ammonia, to free from alkali, taking the usual precautions as to washing free from chlorides in each case.

Weigh as Cr_2O_3.

If the intermediate fusions with bisulphate is omitted, some chromium will not be oxidized.

METHOD OF ANALYSES OF TITANIUM-ALUMINIUM.

2 gms. of the alloy in a porcelain evaporating dish (5 inches in diameter and covered by a watch glass) are dissolved by gradual addition of 50 c.c. of "potash solution" (100 gms. KOH in one litre distilled water). Boil for ten minutes to insure complete solution. Dilute with distilled water to about 125 c.c. Boil up and filter as quickly as possible, washing ten times with boiling water. This filtration separates the iron and titanium quite completely from aluminium. Burn off the residue in a porcelain crucible. Crush it in an agate mortar, and mix with about 8 gms (6 gms. first, then 2 gms. later) of pure bisulphate of potassium. Fuse in a thin-walled platinum crucible of about 40 c.c. capacity. The cover of the crucible should fit well.

During the first 15 minutes the crucible should be on a platinum wire triangle over a small flame of a Bunsen burner. The burner flame should be protected from draughts by a sheet-iron chimney, and the flame at first should just touch the crucible bottom. At intervals of 5 minutes remove the cover, carefully invert it (without losing the drop of $KHSO_4$), and place it on a clean stone surface. Then give the contents a rotating motion, holding the crucible firmly in the tongs. At the end of 15 minutes turn the light up till the lower one-fourth of the crucible is red hot; agitate frequently as before. In 10 minutes more turn on flame full and heat for five minutes, with shaking. Cool, add 2 gms. more $KHSO_4$, and gradually bring to a homogeneous fusion, but do not heat long enough to drive off much free SO_3.

Pour out the liquid fusion into a warmed and dried platinum dish; after the cake cools it will not adhere to the dish. Place it, together with the crucible and cover, in a 200 c.c. beaker. Add 150 c.c. of water; heat to and keep at 40 degrees C., *with frequent stirring*, until all soluble matter is dissolved. Filter, rejecting the residue, if ignition and treatment with HF show it to be only SiO_2. If it contains anything more, fuse with $KHSO_4$ again.

ESTIMATION OF TITANIUM.

The filtrate contains all the TiO_2 and Fe_2O_3. Add dilute NH_4OH to slight precipitation not redissolved by stirring. Add dilute (1 to 3) H_2SO_4 until this precipitate just redissolves. Add 4 drops of concentrated H_2SO_4 to the solution, dilute to 250 c.c., and saturate with sulphurous acid gas. Heat slowly to boiling, and boil gently for three-quarters of an hour. Add a little strong SO_2 water occasionally to keep the iron in a ferrous state. Filter through double washed filters, and wash with hot water. Ignite in porcelain crucible over blast-lamp.

Weight of $TiO_2 \times 60 = Ti$.

ESTIMATION OF IRON.

In the filtrate from the TiO_2, the Fe is oxidized, precip NH_4OH, filtered and washed, redissolved in HCl, and titra bichromate. Do not weigh the Fe_2O_3 and Al_2O_3 as pre Attempts to titrate the iron in the sulphate solution occasio results which are not accurate.

ESTIMATION OF SILICON IN TITANIUM-ALUMINIUM AL

Silicon is estimated just as usual, except that we use a li HCl (20 c.c.) in redissolving after evaporation with H_2SO_4. these conditions, no TiO_2 remains with the silica, although it test it, always, with HF and H_2SO_4. *Jour. Anal. App.*

Reports of Companies.

THE UNITED ALKALI CO., LTD.

THE OUTLOOK OF THE UNION.

THE first annual general meeting of the shareholders of this took place on Thursday last week at the Law Associatio Cook-street, Liverpool. Sir Charles Tennant, Bart., presided, were also present Colonel Gamble, C.B., Colonel Gaskell, J.P. John Brock, J.P., G. L. Wigg, J.P., W. J. Menzies, J. E. I James Tennant, J.P., Thomas Alexander, Robert Shaw, A. D. M'Kechnie, J P., E. Baxter, J. A. E. Rayner, C. E. Barl Gamble, H. Gaskell, jun., J.P., P. J. Worsley, J.P, J. C. S M.P., Charles Wigg, E. R. Muspratt, J.P., and J. H. Dennis.

The CHAIRMAN said that holding as he did the position of president of the company, the duty of presiding at their annua devolved upon him He came before them not only as the president, but as one of the largest shareholders, and he came hear from the chairman an account of the directors' stewardshi a variety of causes he had not been able to take a continu part in the management of the company, and therefore what M would tell them was of no less interest to him than to the sha themselves. In fact, he had come there to approve or disap the conduct of the directors according to what would appe statement of Mr. Brock, and he wished to be regarded as th piece of the shareholders rather than as the mouthpiece of t (Applause.)

The report stated that the directors considered that they h reason to be satisfied with the result of the first 14 months' and with the position and prospect of the company. The balance-sheet and profit and loss account on the working of th months which ended on the 31st December last showed a net £536,870. 3s. 3d., which they proposed should be divided as fo Interim dividend on preference shares at 7 per cent per an eight months to 30th June, 1891, paid 28th Augus £95,152. 0s. 11d.; dividend at 7s. per share, for six month December, 1891, payable 26th March, 1892, £96,355. 3 £191,507. 4s. 2d.; interim dividend on ordinary shares at 5 per annum, for eight months to 30th June, 1891, paid 28th 1891, £84,652. 5s. 7d.; dividend at 5s per share, for six m 31st December, 1891, payable 26th March, 1892, £70,500. 1 £155.153. 4s. 1d.; amount to be placed to the rese £190,209. 15s.—£536,870. 3s. 3d.

Mr. JOHN BROCK, the chairman of the directors, said tha him, as he knew it also gave all the directors, very great pl meet the shareholders at this their first annual meeting. months ago, when they met at the statutory meeting, they entering on a year of exceedingly hard but interesting work. to thoroughly investigate the conditions under which each works was manufacturing; to organise a complete system of re management; and arrange a uniform plan of bookkeping, pro all needful checks and a continuous audit; to organise the buying departments, each of which was a large business and to do this with due consideration for their employés, and least amount of interference with the steady daily run of th facturing and commercial operations. This organisation had much anxious consideration and delicate management. Hardl works could be compared with respect to their system of mar of keeping accounts and costs, and conducting their commerci tions. Now they were all brought into line. (Hear, hear.) could be compared with works, weak parts had been, and we strengthened, and unbalanced plants balanced. In the case o the smaller out-lying works, they had, after careful consi judged it best to close them, distributing the plant, in the mai other works where it could be more effectively employed. various articles they manufactured were being produced at th where they could be made best and cheapest; in fact, as he their statutory meeting, they were applying to each works th standard of working, directed by the best experience and

ney could command; and, as the result, they had already seen y to materially reduce the price of one or two of the leading they produced, their aim being to manufacture at the lowest cost, and sell at the lowest possible price consistent with a fair the shareholders. (Hear, hear.) During the year, the two Works in St. Helens, belonging to the old established and d firm of Messrs. J. C. Gamble and Son, had come into their n, and were now the property of the United Alkali Company, as were also the Copper Works in the same town, established ked by Mr. Duncan M'Kechnie. At these latter works, a antity of the cupreous cinders produced at the alkali works of pany were treated for the extraction of copper and silver by s known as the "wet process," and as they were in direct ion with similar works already owned by the United Alkali y, it was considered advisable to acquire these works, and so ay with the competition which would otherwise have existed. ear.) With regard to their salt works, the two northern ad been kept in full operation throughout the year, while at eetwood works they had largely increased the out-turn. to the accounts, they would notice that they had issued all the e stock; that of their £3,000,000. of 7 per cent. preference hey had issued £2,825,240.; and of their £3,000,000. of they had issued £2,892,430.; leaving unissued of preference 0., and of ordinary £107,570.—together, £282,330. The . 6s. 5d. of debenture interest was only due and paid on 1st of this year, and therefore, not being paid within the year alance sheet had to appear as a liability. On the other side, hold, leasehold, and other property and plant stood at 236. 13s. 7d., the additions during the year at £65,725. 13s. ing a total of £7,480,962. 6s. 9d. The stocks of manufactured , raw materials, stores, &c., which have been carefully valued £943,082. 7s 6d. Coming now to the profit and loss account ld notice that their gross profit in the manufacturing account 0,891 1s. 2d., which, with one other small amount for transfer ught the gross profit to a total of £781,053 16s. 10d. This arrived at after debiting the account with the necessarily very arges for repairs, and the cost of maintaining the plant and ry in the most efficient condition, upon which the low cost of on so much depends. (Hear, hear.) Considering that this r first year, during which the whole of this great undertaking to be organised and consolidated, a work, as he had said, of t difficulty and delicacy, and which of necessity had interfered t with the steady run of their business, he thought that they gree that this was a satisfactory profit to have made. e.) On the other side of the account they had £26 779. 11s. reliminary expenses, an amount which he was confident they nsider exceptionally moderate when the magnitude of their was remembered. The whole of this they wrote off and clear e for all. (Hear, hear.) The other items of charge spoke selves. This left them with a net balance of profit of 5. 17s. 5d. Out of this they had already paid £52,786. 11s. 5d. t, at the rate of 5 per cent. per annum, due to vendors on tions of their purchase money, including stocks, as had to be ash in accordance with their sale agreements. A further sum ,800. 2s. 9d. paid for debenture interest left an available of £536,870. 3s. 3d. This they proposed to deal with as —Interim dividends already paid for the eight months ending h, 1891. On the preference shares, £95,152. 0s. 11d.; on ary shares, £84,652. 5s. 7d.—together, £179,804. 6s 6d.: payable on the 26th ult. for the six months ending December 1, of 7s. per share, on the preference shares, £96,355. 3s. 3d.; on the ordinary shares for the same period of 5s. per share, 18s. 6d.—together, £166,856. 1s. 9d., leaving a balance ,209. 15s., which they carried to the reserve fund to pro- depreciation and other contingencies. He felt sure that the n of their balance would meet with the hearty approval of all ul business men. In a large undertaking like theirs, with its ad ramifications, the constant liability to make alterations and ents in mode of manufacture, often involving considerable tlay, the forming of a strong reserve fund and strengthening y year by year was a matter of vital importance to the of the company. (Hear, hear.) They were working not or to-day, but they hoped for all time to come; let them lay their foundations broad and deep, taking care that they e reserves to meet, not only the vicissitudes of trade, but also ant advances of technical science. (Applause.) When g them at our statutory meeting, he said he felt sure that their would not be their best He still said so. The year now was full of promise. Very large sales had already been made ding articles they manufactured at full prices; their works a whole, producing much more cheaply than they were twelve go; further economies were being established; indeed, they eir hands, and secured to the company, methods of econo- duction which were not open to others, and which must therefore secure to them a leading position, which, as time goes on would bear, he hoped, golden fruit for the shareholders (Applause.) He proposed that the report and statement of accounts be received and adopted, and that dividends be paid as already set forth.

Mr. J. C. Stevenson, M.P., vice-chairman, seconded the motion, which after one or two replies to questions submitted by shareholders, was supported by the President, who said it was quite evident the report had their general approbation. (Applause.) Great credit attached to the chairman and the directors associated with him for having, as he tersely expressed it, brought all into line. He held his property as a good property, which would very soon show a considerable premium on the par prices. He regarded it as a good investment for himself and his children. If he had not devoted much time to the company it was not to be understood that the same remark applied to the vice-presidents, for they unremittingly devoted time and attention to the business, and to them was owing a deep debt of gratitude.

The resolution was then unanimously adopted.

The President moved, and Mr. Brock seconded, the re-election of the retiring directors—Messrs. E. Baxter, H. Gaskell, jun., D. M'Kechnie, Charles Wigg, and P. J. Worsley, which was agreed to.

Mr. Joseph Withered, Bristol, moved, and Mr. Gossage seconded, the re-election of the auditors—Messrs. Stead, Taylor, and Stead; T. W. Read and Co., Finnay and Co., Monkhouse, Goddard, and Co. The motion was passed.

Mr. Brock moved, and Mr. E. K. Muspratt seconded, thanks to the staff for the very close attention to the interests of the company. Mr. Muspratt warmly eulogised the technical ability of members of the staff, which was not excelled in Europe. The motion was agreed to.

Mr. Stevenson, M.P., moved, and Mr. Dennis seconded thanks to the chairman, and thanks to the president having been presented, on the motion of Mr. Holbrook Gaskell, the proceedings concluded.

PRICE'S PATENT CANDLE COMPANY, LIMITED.

The report of Price's Patent Candle Company Limited, states that the profit of 1891 amounted to £75,467., to which has to be added £10,403. carried forward, making together £85,870. Deducting the dividend paid last September, £28,125., and as the Directors recommend, £12,500. for depreciation of fixed properties and £10,000. in extinction of the goodwill account, together £50,625, there will remain an available balance of £35,245. Out of that sum the Directors recommend a dividend of 15s. a share, making with the September dividend of like amount a distribution of £1. 10s. per share for the year 1891, leaving £7,120. to be carried forward.

Trade Notes.

VASELINE OIL AGENTS.—Messrs. M. Wells and Co., manufacturers of the well-known vaseline oils, etc., Hardman-street Oil Works, Manchester, have appointed Messrs. S. and E. Ransome and Co., Essex-street, Strand, W.C., their sole agents for London and district.

MESSRS. WERNER AND PFLEIDERER.—This well known firm, who have such an excellent name for the manufacture of labour-saving machinery, such as their kneading and mixing machines, paint and other grinding mills, have recently taken new premises which are situated at 117, Queen Victoria-street, E.C., to which address all orders and business communications should in future be addressed.

THE MANUFACTURE OF NICKEL.—A company has been formed at Havre for the manufacture of nickel. It is having a factory constructed on the Tancarville Canal, and has concluded an important contract with the government for nickel-plating Lebel rifles. The mineral used has hitherto come from New Caledonia, but is henceforth to be imported from Canada.

ELECTRIC LIGHTING CONTRACT.—Messrs. Mather & Platt, Manchester, have been commissioned by the Cheshire Lines Committee to light the whole of its extensive goods depot at Manchester by electricity. The installation will require seventy-six 1,000-candle-power and ten 2,000-candle-power arc lamps and sixty-five 16-candle-power glow lamps.

ARTIFICIAL WINE.—Some little time ago we published in these columns an account of the various methods in vogue for the production of artificial wines, more particularly those purported to be made in the Charente district. A decree has recently been published in the *Madria Gazette*, forbidding the manufacture of artificial wines in Spain. This is likely to relieve the minds of those who are partial to good wine.

THE QUALITY OF FRENCH PIGMENTS.—All the principal French painters in oil colours have sent a petition to the authorities calling attention to the bad quality of the pigments supplied to them by the trade, in consequence of which their pictures, they allege, deteroriate with alarming rapidity. They wish the inspectors of the Public Laboratory to turn their attention to the colour factories, and see that inferior materials are not used.

Purifying Carbon Bisulphide.—To purify carbon bisulphide without distillation one litre is treated with 0·5 c.c. of bromine and allowed to stand for three to four hours. The excess of bromine is removed by agitation with caustic potash. Any remaining cloudiness may then be removed by agitation with a little dry calcium chloride, with subsequent filtration. The carbon bisulphide treated in this way is colourless, of pleasant smell, and evaporates without residue.

Messrs. Crosier, Mills, and Co.—This firm beg to give notice that they are in a position to offer at advantageous terms brass, bronze, aluminium and aluminium bronze, all kinds of boiler fittings, etc. Mr. Crosier, who for a long time has been intimately connected with the engineering trade, has gone into partnership with Mr. Mills, who, through his experience as a patentee and manufacturer, will be able to give practical attention to the business Their address is 9, Queen-street, Quayside, Newcastle-on-Tyne.

The Study of Japanese Science and Art.—A Society is in course of formation for the encouragement of the study of Japanese art, science, and industries, of the commerce and finance, the social life, the literature, the language, history, and folk-lore of the Japanese. It is intended that the Society shall hold periodical meetings for the reading of papers and for discussion shall create a library, and arrange temporary loan exhibitions, and otherwise promote the objects expressed in the title of the Society. The first general meeting will be held towards the end of this month in the rooms of the Society of Arts.

New Lead Salts.—Three new sulpho-haloid salts of lead have been obtained by M. F. Parmentier. They are the chloro-sulphide, the bromo-sulphide, and the iodo-sulphide. The first, which is of a vermilion colour when suspended in water and rather deeper when deposited, is due to an unstable state of equilibrium resulting from the action of concentrated hydrochloric acid on lead sulphide, and the action of sulphuretted hydrogen on lead chloride in presence of a little hydrochloric acid. The other two, which appear to possess the same physical properties, are formed by analogous methods.

India-rubber Steam Hose.—Mr. Alfred Calmon, of the India-rubber and Asbestos Factory, Hamburg, has introduced an indestructible steam hose. The destructive action of steam on india-rubber is well-known. The desired end is accomplished in this case by lining the hose with an inner wall of asbestos. Another speciality is the "Universal Red Hose," which resists a water pressure equal to 60 atmospheres, and is light and handy withal. The latest invention, however, is a new form of belt for transmitting power. The quality and efficiency of this belt are so perfect that a twelve months' guarantee is given with each, without any proviso. Users of belting will appreciate the responsibility this incurs.

Preparing Pure Boron.—According to the recent researches of M. H. Moissan, if an excess of boric acid is mixed and heated with magnesia, a mixture is obtained which consists of borate and boride of magnesium and boron. By washing with acid, fusing, and subsequently washing again, the whole of the borate and boride can be removed and pure boron is left. He also intimates that the mixture hitherto known as amorphous boron, obtained by treating boric acid with metallic sodium, and again treating the mass thus obtained, with water and hydrochloric acid, is not really amorphous boron, but consists of a mixture of boron, boride of sodium, hydride of boron, and hydrated boric acid.

American Salt.—The total production of salt in the United States for the year 1891 was 10,229,691 barrels, valued at $5,872,186. The importations were about 800,000 barrels, chiefly from England. The finest salt is made by the vacuum pan process. About four-tenths of the American production are due to Michigan, four-tenths to New York, not quite one-tenth to Kansas, and the remainder to Ohio, West Virginia, Louisiana, California, Utah, Nevada, Texas. Perhaps the most wonderful deposit of salt in America is at Petite Anse, La., where, at a depth of sixteen to twenty-five feet below the surface, a deposit of salt over 1,000 ft. thick is found. This salt is of remarkable purity.

The Cost of Purifying London Sewage.—The following is the return made to the London County Council of the cost of the chemicals employed in treating the sewage of the Metropolis for the year ending December 31st, 1891:—During the summer 500 tons of manganate of soda and 347 tons of sulphuric acid were employed in deodorising sewage. At the southern outfall 2,228 millions of gallons of sewage were treated, and 46,873 tons of sludge were sent out to sea. For precipitation 407 tons of lime and 113 tons of sulphate of iron were used, while 923 tons of manganate of soda and 532 tons of sulphuric acid were used in deodorisation. The cost of the lime used during the year was £8,146; sulphate of iron, £3,184; manganate of soda and sulphuric acid, £27,525.

Threatened Prosecution of a Trust Monopoly.—The Standard Oil Company has called a meeting to see whether it shall be dissolved in order to avoid a prosecution under the laws against a trust monopoly. The annual business of this Company amounts to £15,000,000., of which £10,000,000. are exports. The nominal *capital is £19,000,000.*, but it has been quoted as high as 125 premium. Mr. John Rockfeller, the organiser of the Company, has a fortune of £27,000,000., all of which has been accumulated sinc

The Quality of London Gas.—During four weeks en 12th ult., Mr. Dibdin reported to the London County Counc teen failures of the illuminating power of the gas supplied metropolis, eleven of these being reported during the week en 5th ult. Of the nineteen fifteen are recorded against the Ga and Coke Company, three against the South Metropolitan, a against the Commercial. The lowest determination was 15·2— the Gas Light and Coke Company.

New Graphite Lubricant.—A site has recently been pu at Nicetown, Pa., U.S.A., where a works for manufacturi graphite will shortly be erected. Fibre graphite, which is the tion of P. H. Holmes, of Gardiner, Maine, is a material n graphite and wood fibre in such a way that it is capable of being turned, and, in fact, worked like a metal. It is made by mixin divided graphite with wood fibre and compressing in a mould, the fibres will all lie parallel; the mass is then soaked in lin and baked The material is used as an anti-friction bearing oil, the lubrication being effected by the graphite. It has prov exceedingly efficient for this purpose, and was recently awar Elliot-Cresson medal of the Franklin Institute.

Silisian Chemical Trade.—According to the report Breslau Chemical Union, Silesia, the trade in chemicals represents about 70 per cent. of the whole trade, has bee satisfactory. On the other hand the demand for artificial man been very weak. The trade in the factories amounted to 1, cwts., in value about 7,000,573 mks. The rough gain amou 1,402,864 mks. On the other hand for necessary repairs 216,0 were demanded, for other expenses 165,905 mks., for interest mks., and 138,816 mks. were carried forward. To the renew 60,000 mks. were devoted, whilst 423,000 mks. were consu declaring a dividend of 7½ per cent. on 5,640,000 mks. Join Capital.

Lithium Nitride.—It was recently shown by M. Maquer the metals of the so-called alkaline earths combined direct nitrogen, forming compounds which were immediately decomp water, with the production of ammonia and the hydrate of the Since then, M. L Ouvrard has discovered that lithium, belonging to a different group, behaves in a similar manner. ing a stream of nitrogen over fused lithium, he obtained, as from his communication made at the last meeting of the Paris A des Sciences, a black spongy mass of lithium nitride, which, o treated with water, liberated ammonia, lithia remaining in soluti is, therefore, now necessary to add calcium, barium, str magnesium, and lithium to the formerly small number of e known to unite directly with nitrogen.

The Non-Luminosity of Bunsen Flames.—The various which tend to cause the loss of luminosity in a Bunsen flame Professor V. B. Lewes, summarised as follows:—(1) The c action of the atmospheric oxygen, which causes loss of lumin burning up the hydrocarbons before they, in their diluted co can afford acetylene (2) The diluting action of the atm nitrogen, which, by increasing the temperature necessary t about the partial decomposition of the hydrocarbons present, the formation of acetylene, and so causes non-luminosity. cooling influence of the air introduced, which is able to add general result, although the cooling is less than the increase in t ture brought about by the oxidation due to the oxygen in the In a normal Bunsen flame the nitrogen and oxygen are of also importance in bringing about non-luminosity, but if the quanti be increased, oxidation becomes the principal factor, and the practically ceases to exert any influence.

Microscopical Preserving Fluid.—Mr. A. Haly, of t ombo Museum, has been experimenting with carbolised coco as a preservative. His experience, he states, seems to show t one of the most perfect preservatives known, both for form an Cocoanut oil and carbolic acid freely mix in all proportion mixtures at present under trial are oil raised to the specific gr 10° and 29° below proof spirit by the addition of carbolic acid. the gum and glycerine process is absolutely useless for any except certain families of fish, this mixture is good for every vertebrate. The most delicate frogs are quite uninjured by snakes undergo no change. The acid also enables cocoanut turpentine to be mixed together, forming a splendid microscop in which objects may be allowed to soak without any previous tion, and in which they become very transparent. A minute s crustacean, of the order *Copepoda*, and the leg of a fly, simply l slide in a drop of this fluid, and covered with an ordinary glass, without any cell being made or cement employed, have Mr. Haly's table unaltered for 10 months.

Society of Chemical Industry Meetings: *Section.*—Next meeting will be held on Monday, April 4th, w

will be read, one "On the analysis of coal gas for impurities," Fairley. F.I.C, and the other by H. R. Procter, F.I.C., on technical analysis of gambier." *London Section.*—The next of this section will be held at Burlington House, on Monpril 4th. There are three papers down for reading, one Alder Wright, F.R.S, on "Specific gravities for practical purthe second by Mr. A. Baur, Ph.D., on "Artificial musk," and l by Mr. Leeds, F.I.C., being a "Note on rosin oil." *Man-Section.*—On Friday, April 8th, the annual general meeting of ion will be held in the rooms of the Chemical Club, Victoria when four papers will be read by Messrs. J. Carter Bell, Dr. n, Budenburg and Heys and S. Rothwell respectively, on "The of snow in the neighbourhood of chemical works," "The ture of oxygen on a commercial scale," "Gaseous fluids under ," and "The action of frost on cotton." *Nottingham Section.* annual meeting of the section will be held on Thursday , March 31st, in the Chemical Lecture Theatre, University , Nottingham, when the following papers will also be read:— he Volumetric determination of calcium phosphate by means um solution," by Messrs. J. B. Coleman and J. D. Granger. On Dumas, method of estimating nitrogen in organic bodies," Jas. O'Sullivan.

OIL AS AN INSULATOR.

ie Institution of Electrical Engineers recently, an interesting per, illustrated by experiments, was read by Professor D. E. F.R.S., the discoverer of the microphone, on the value of oil ulator of electricity, especially for currents of high potential uency. Professor Hughes was led to recognise the merits and st the use of oil as early as 1858, after the failure of the first antic cable. It then appeared to him that a fluid insulator -correcting properties would be preferable to a solid insulator, guttapercha or indiarubber, which, when once punctured by s, cannot close the wound like oil, and thus renders the entire useless until the fault is removed. Professor Hughes made speriments on various oils at that time, and embodied his in a British patent, dated January 11, 1859, for "an improved insulating electrical conducting wires." The oil he had found viceable was resin oil, which has an extraordinary high resisd is somewhat viscid. He proposed to contain it in tubes of cha or metal, through which the conductors, coated either with yer of guttapercha or merely covered with fibrous material, in. The inventor tried for two years to get English electricians t his method, but in vain; and, having to proceed to the at, he was obliged to abandon it. The late Mr. David of Philadelphia, subsequently introduced it in America, with cess and profit to himself, for insulating underground telegraph Oil is now used for insulating transformers, and it promises to oyed in a great many other ways. The superiority of resin oil rly demonstrated by Professor Hughes to the meeting with the t Wimshurst static electric machine, giving powerful sparks of atory character. Professor Hughes also plunged wires insulated ubes containing thick resin oil into salt water, and on cutting tube so as to lay bare the wire the insulation was for a moment d, but in less than a second the oil percolated through the cut ored the insulation. Of course, with a solid insulator the uld have permanently destroyed the insulation until it had been

Parliamentary Jottings.

POLISH WORKMEN AT WIDNES.

House of Commons last week Mr. EDWARDS-MOSS asked the t of the Local Government Board whether his attention had led to an application recently made to the Prescot Board of ns by the chemical workers of Widnes, who have been thrown nployment and become dependent on the workhouse, owing to oyment in their place of foreign paupers at the works, and he was aware that these pauper immigrants were Poles, 80 per hom arrive in this country quite destitute, and who by working ution wages are displacing the natural working population of ity, and whether in view of the fact that much distress is caused nd an additional burden is being placed upon the rates of the he Government will consider the recommendations of the Select ee on Emigration and Immigration in 1889, and take some put a stop to the immigration of foreign paupers.

ITCHIE said it was true that some of the chemical workers had been thrown out of work, but this was not owing to their ing taken by foreigners. These men were employed because they were strong, able, and fit for the employment. The number of Poles employed did not exceed fifty, the majority of whom had been in this country for some years. Not one of the men who had applied for relief to the guardians could say that he had lost his place owing to the foreigners. The latter received the same wages as the other men.

Market Reports.

TAR AND AMMONIA PRODUCTS.

There is no business doing in benzol, as consumers seem to be afraid to touch the article even at present prices, which are nominally 1s. 10d. to 1s. 11d. for 90%, and about 1s. 6d. for 50/90's. There is no change to report in anthracene; the quotations remain about 1s. for 30% A, and about 8½d. for 30% B. Pitch is the only other product which retains its firmness.

The sulphate of ammonia market remains in the same position, although parcels seem to be moving off a little more freely, but at very low prices still. The shipments from Hull seem to indicate a somewhat larger demand, and from Goole also, but the real reason seems to be that the Leith deliveries are being made very tardily, and there is a rumour abroad that some of the Scotch sellers are much over sold. At Liverpool there are sellers at £10. 1s. 3d., and no more than £10. 5s. is obtainable at Hull. Beckton price has advanced to £10. 2s. 6d., while outside London makes are value for £10. 7s. 6d. Leith values may be stated at £10. 5s.

REPORT ON MANURE MATERIAL.

During the week there has been a rather better tone in the market and more doing, but still without material improvement in prices.

Florida phosphate rock, 75/80% continues to offer at 8½d. per unit, in cargoes to U.K. or Continent, and as low as 7¼d. per unit has been taken for 60% Peace river rock. Hot air dried South Carolina river rock may be quoted at about 7½d. per unit, and ¼d. less would be business for Carolina land rock. Quotations for Continental descriptions remain unchanged.

Further business has been done in River Plate bones afloat at £4. 2s. 6d., which is closing value in the afloat positions. For shipment £4. 5s. to £4. 7s. 6d. would have to be paid. Crushed Kurrachee bones on spot are worth £4. 7s. 6d., but for shipment ahead £4. 5s. is nearest value, ex quay Liverpool. £4. 7s. 6d. has been accepted for fine Bombay bone meal on spot, and this price up to £4. 10s. would still be accepted for finest quality. For fair average Bombay bone meal £4. 5s. is full value. Common grinding bones are worth £3. 17s. 6d. to £4., according to quality and condition.

Nitrate of soda is fairly steady, and spot is worth 9s. 1½d. to 9s. 3d. per cwt., according to quantity and test. Due cargoes are worth about 9s., and for those of handy size and good test something more is now asked.

There is nothing further to report in dried blood. Kainit continues scarce at 45s. per ton, in bags, ex quay Liverpool. Superphosphates unchanged.

LIVERPOOL OIL AND COLOUR MARKET.

LIVERPOOL, WEDNESDAY.

OILS.—Palm oil has been dull all the week, with very little passing sales, including Lagos at £21. 10s., Cameroons £20. 5s., both transit. Olive has experienced no change in prices, but is steady, with a somewhat improved business doing. Linseed declined in buyers' favour early in the week to 19s. 3d. to 20s. 6d. per cwt. in export casks, at which prices it has remained stationary with the market steady. Cottonseed oil has not changed, and both Liverpool refined and American are very firm at 19s. 6d. and 20s per cwt. respectively, there having been no deviation from these prices during the week. Castor oil is weaker, good seconds Calcutta being quoted 2$\frac{11}{16}$, there being virtually no business at that figure. First pressure French remains at 2⅞d. per lb. Tallow is much the same as it was at the close of last week; prices are unchanged, and the market is featureless. Resin was a shade easier at the beginning of the week, but has advanced again, however, and 4s. 4½d. per cwt. is now the price for common. Spirits of turpentine has varied from 26s. 9d. to 27s. per cwt., but to-day the market is firm at 27s. Petroleum: American 5¼d. to 6½d. according to quality; Russian refined 4⅜d. to 4½d. per gallon.

COLOURS unaltered. Ochres: Oxfordshire, common, £10., medium, £12., best, £15.; Derbyshire, common, 40s., medium, 50s., best, 60s. Welsh, best, 70s., seconds, 50s., and common, 18s.; Irish, Devonshire, 40s. to 45s.; French, J.C., 55s. to 60s.;

M.C., 65s. to 67s. 6d. Umber: Turkish quiet. Devonshire, 50s. to 55s. White lead, red lead, and oxide of zinc unchanged. Venetian red, £6. 10s. to £10. Cobalt: Prepared oxide, 10s 6d.; black, 9s. 9d.; blue, 6s. 6d. Zaffres: No. 1, 3s. 6d.; No. 2, 2s. 6d. Oxide of iron: common, £6.; medium, £10.; finest, £20.

MISCELLANEOUS CHEMICAL MARKET.

The demand for bleaching powder continues good in all directions, and price is well maintained at £7. 10s. f.o.r. makers' works. Some business in this article has been done over 1893. Chlorate of potash and chlorate of soda are steady in price at the recent advances, viz.—7d. and 7½d. per lb. respectively. Some small resales of potash, however, are still on the market at ¼d. per lb. less. The demand for alkali generally is somewhat flat, more particularly in caustic soda, but prices are unaltered, viz—f.o.b. Tyne, 77% £11. 10s.; f.o.b. Liverpool, 74% £11 10s.; 70% £10. 10s.; 60% £9. 7s. 6d.; 60% cream £9. 2s. 6d. per ton, in 10 ton lots. Soda ash: 1⅜d. per degree, is still the quotation for Leblanc make. Ammonia ash 58% 1$\frac{5}{16}$. Soda crystals quiet. Bicarbonate of soda £6. 10s. f.o.b. Vitriol and muriatic acids are still in fair request; prices unchanged. Salt cake is rather in excess of demand. White powdered arsenic has slightly declined in value owing to excess of stock, and spot quotations are from £10. 12s. 6d. to £10. 15s. per ton. For recovered sulphur there is still a fair demand and price is firm at £5. 15s. f.o.r. Sulphate of copper has rather improved in value. Carbolic acid crystals are slightly firmer. Aniline oil and salt are nominally 7½d. and 6¾d. respectively. Prussiate of potash continues firm at 10½d. to 10¾d. Acetates of lime are still difficult to move, and prices are without any improvement for spot delivery. Other acetates generally have a lower tendency. Sulphocyanides meet with small demand on the spot. Trade in potash, caustic, and carbonate is rather less active, and there is no material change in values. The demand for chemicals generally in many branches of trade is still far from satisfactory.

THE METAL MARKETS.

LONDON, Wednesday.—Pig iron steady; Scotch warrants closed at 40s. 10½d. cash. Middlesbrough 37s. 4d. cash, and Hematite 46s. 6d. cash. Copper, improved. Chili bars, G O.B.'s and G.M B.'s closed at £45 16s. 3d. to £45. 17s. 6d. cash, and £46. 10s. to £46. 15s three months. Tin steady: Straits closed at £89. 15s. to £90. 5s. cash, and £90. to £90. 7s. 6d. three months. Australian, £90. cash; English ingots, £93. to £93. 10s. Lead quiet: Spanish, £10. 17s. 6d. English, £11. to £11. 5s. Silesian spelter, ordinary, £21. 0s. Quicksilver, £7. 2s. 6d. first hands, and second hands £7. 1s. 6d. Copper shares firm: Cape, 1⅝ to 1¾; Copiapo, 2¼ to 2⅜; Libiola, 3 to 3⅛; Mason and Barry, 4⅞ to 5; Rio Tinto, 17¼ to 17⅜; Tharsis, 5⅝ to 5¾; Namaqua, 1¼ to 1⅜; Panulcillo ¾ to ⅞.

WOLVERHAMPTON, Wednesday.—Confidence is disturbed by the recent failures here and in Cleveland, and the market wears an unsatisfactory aspect. Numbers of works remain closed or only half occupied owing to slackness of demand, and orders are all small. Prices fairly steady. Pig consumers are inquiring after contracts preparatory to the quarterly meetings on April 13 and 14. Derbyshire pigs, 44s.; Lincolns, 47s. upwards; Staffordshire common, 37s. 6d.

GLASGOW, Wednesday.—Market idle. Scotch done at 41s. cash; closing with buyers at 40s. 10½d. cash, sellers ask 41s. 1½d. Middlesbrough closes with buyers at 37s. 4d. cash, sellers ask 37s. 6d. Hematite closes with buyers at 46s. 5½d. cash, sellers ask 46s. 6½d.

TYNE CHEMICAL REPORT.

Tuesday.

Chemicals continue firm and have an upward tendency owing to scarcity, stocks having been reduced. Bleaching powder, softs, £7. 10s. per ton, hards, £7. 15s. per ton; caustic soda, 76/77%, £11. 15s. per ton, 70%, £10. 10s. per ton; recovered sulphur, 2 cwt. bags, £5. 10s. per ton; soda ash, 48%, £5. 8s. 9d. per ton, 52%, £5. 17s. 9d. per ton, 56%, £6. 6s. 9d per ton; alkali, 36%, £4. 18s. 6d. per ton; white alkali, 48%, £6. 10s. per ton, 50%, £6. 15s. 6d. per ton, 52%, £7. per ton; hyposulphite of soda, £7. per ton in 5-7 cwt. casks, £7. 15s. per ton in 1 cwt. kegs, both in 10 ton lots; silicate of soda, 75° Tw. £3. per ton, 100° Tw. £4. per ton, 140° Tw. £4. 7s. 6d. per ton; soda crystals, in casks, £2. 17s. 6d. per ton gross weight, in 2 cwt. bags, £2. 17s. 6d. per ton nett weight; *chlorate of potash*, 6½d. per lb. less 6%; pearl hardening, £3. 10s. per ton; pure white sulphate of alumina, £4. 10s. per to fixe, £7. 10s. per ton; chloride of barium, £7. 10s. per ton; baryta crystals, £17. per ton; nitrate of bary a, ground, £ per ton; sulphide of barium, £7. per ton; carbonate of £28. 10s. per ton; aluminate of soda, £33. 10s. per ton; b barium, £11. per ton.

South Durham salt firmer. The production of this article to become seriously curtailed owing to the lack of coals.

Coals: Notwithstanding the stoppage in Durham, the North coal trade is dull; shipments being restricted owing to the late of the Baltic. Best Northumbrian steam, 10s. 9d. to 11s. per coal scarce, price quoted 13s. 6d. per ton.. There is rather feeling as regards the Durham strike, and a ballot is now with a view of ascertaining if there is a majority in favour of g Federation Board power to settle.

THE LIVERPOOL MINERAL MARKET

Minerals have continued to rule quieter during the Manganese: Arrivals continue small, and with the scarcity class ore sales have been made at higher figures, whilst stocks to decline. Borate, 6¼d. per lb.; sulphate, £21. 10s.; 1s. 6d. per lb; chloride, £15.; carbonate, £12. 10s., Magnesite: Raw lump remains flat. Raw ground £6. calcined, £12. 10s. Bauxite (Irish Hill brand) firm; lun seconds, 16s; and thirds, 12s. French chalk: Arrivals contin whilst a fair business is being done at last week's qu "Angel White" brand; silvery, 90s. to 92s 6d.; prime qua to 95s.; and superfine, 105s. Barytes: Carbonate firmer, bu for all qualities, 90s. to 95s.; nuts, 70s. to 80s.; whilst fine sulphate is steady. "Angel White," No. 1, 70s.; No. 2, 60s. No. 3, 45s. Pumicestone steady. Iron ore: Bilbao shipments on account of the strike. Irish and Cumberland easy. Santa manganiferous, there is more doing. Emerystone: Best quali bringing full prices; No. 1 lump, £5. 10s. to £6.; smalls, £5. 10s. Fullers' earth quiet; best lump, 55s.; fine im ground, £7.; "Emerald" ground, 80s. Scheelite, wolfra state of soda, and tungsten metal continue firm and unaltered. ore: Best qualities inquired for. Antimony ore and metal con easier. Asbestos firm. Potters' lead ore of best quality quiet £12. 10s. to £13. 15s; selected lump, £14. 10s. to £ Calamine easy. Strontia sulphate (celestine) quiet. Lime changed, especially for English manufactured; old G.G.B. demand at 50s. (ground). Felspar unchanged. Fluorspar: Be scarce. Ferro-manganese firmer, 75%, £12.; 85%, £ Plumbago brisk. Spanish, £5.; best Ceylon lump at last qu Italian and Bohemian, £4. to £12. per ton. "Founders," £6.; Blackwell's "Mineraline," £10. French sand, 20s. to Ground mica, £45 to £50. China clay steady; common, 1 good medium, 22s. 6d. to 25s.; best, 30s. to 35s. (at Runcor ore (oxide of iron) steady; finest quality, 22s. to 23s.

WEST OF SCOTLAND CHEMICALS.

GLASGOW, Tue

While the Continental enquiry for ammonium sulphate is s door to nothing, there has been perceptible a very slight quick the call for the article for home consumption. This has had fluence on holders' view, but proportionately slight in characte is believed that for prompt there are at present no seller £10. 3s. 9d. Forward transactions are spoken of at from to £10. 8s. 9d.

The situation in the paraffin section of the market does not Lubricating and gas-making oils are rather weaker, and in th the latter it is remarked that a large annual contract for the Government, distributed over the Scotch mineral oil compa this year been carried through at a fall of about 20s. a ton f year's figures. Lower gravities of lubricating oils are cheape and have been bought at £3. 10s.

In general chemicals there has been a diminished enqu lessened disposition to buy. Bichromate of potash has recede extent of an increased discount to home buyers. Chlorate of quoted at a farthing less, and sulphate of copper is again February prices. There are no other changes.

Chief prices current are:—Soda crystals, £2. 17s. 6d., net alum in lump, £5. 10s., nett Glasgow; soda ash, 1⅜d., le Tyne; caustic soda, white, 74°, £11. 10s., 70/72°, £10. 10s., £9. 7s. 6d., and cream 60/62°, £9. 2s. 6d., all nett Liverpoo bonate of soda, 5 cwt. casks, £6. 15s., and 1 cwt. casks, £7. ne

kali, 1⅝d., less 2½% Tyne; bleaching powder, £7. 7s. 6d. e; saltcake, 37s. 6d.; borax, English refined, £30. and acid, £37. 10s., nett Glasgow; bichromate of potash, ss 12½% for Scotch and English deliveries (for export ess 10% f.o.b. Glasgow); bichromate of soda, 2¾d., for Scotch and English deliveries (for export 2½d., f.o.b. Glasgow); chlorate of potash, 6¾d., less 5% any rate of soda, 9s. 3d.; sulphate of ammonia, £10. 3s. 9d. Leith; salammoniac, first and second white, £35. and 5% any port; sulphate of copper, £14. 15s. less 5% Liverpool; cale (hard), 2⅝d., and soft 2⅛d. to 3d. per lb.; paraffin , semi-refined, 3⅝d. to 4d.; paraffin spirit (naphtha), 7d. a araffin oil (burning) 5d., 5¼d. and 5½d. according to kind, for Scotch buyers (English sales about 1d. lower); ditto ng), 865°, £3. 10s. to £4., 885°, £5. 5s. to £7., and £6. to £8. Week's imports of raw sugar at Greenock, nts, and 9,300 bags.

New Companies.

., LIMITED.—This company was registered on the 22nd ult., with a 40,000., in £10. shares, to carry on the business of coal masters, iron al, coke, and timber merchants, exporters and importers of and dealers in timber, fuel, oils, ores and minerals, chemicals, etc., smelters, engineers, ters, etc. The subscribers are :—

	Shares.
L. Frith, 29, Sisters-avenue, Clapham, S.W.	2
ridges, 4, Mincing-lane, E.C., merchant	1
Kingsford, 12, Old-square, Lincoln's Inn, W.C.	1
ras, 2, Copthall Buildings, E.C., merchant	1
er, 131, Belgrave-terrace, Lee, S.E.	1
Harrison, 28, Gracechurch-street, E.C.	1
Heath, M.P., Thorpe Hall, Louth	1
White, Standon-place, near Brentwood, Essex	1
P. Clinton, 98, Belgrave-road, S.W.	2

VALES CROWN SOAP AND CANDLE CO., LIMITED.—This company was on the 16th ult., with capital of £40,000., in £10. shares, to acquire n the business of the South Wales Soap Co., Limited, and the Crown andle Co., Limited, and to discharge all their liabilities. The subscribers

	Shares.
nop, Brynmaur, provision merchant	1
ies, Aberdare, provision merchant	1
ers, Treherbert, provision merchant	1
Morgan, Westminster-chambers, Cardiff, agent	1
iams, Newport, Mon., merchant	1
ins, Llwynpia, provision merchant	1
L. Skyrme, The Chase, Newport, Mon.	1
re, Abercarn, Mon., merchant	1
Taylor, Risca, Mon., merchant	1

MINING CORPORATION, LIMITED.—This company was registered on the ith a capital of £50,000., in £1. shares, to adopt and confirm an agree- February 4th, 1892, between Mr J. Fell of the one part, and Lieut.-M. Innes, V.C., R.E., of the other part, for the purchase of lead mines , and to prove, develop, and extend the said mines and minerals. The are :—

	Shares.
Gen. J. J. M. Innes, V.C., R.E., 9, Lexham-gardens, S.W.	1
pbell, 97, Riversdale-road, Highbury	1
J. Filgate, R.E., 106, Jermyn-street, S.W.	1
field, 9, Beversbrook-road, Tufnell Park, N., clerk	1
J. Engleden, R.E., Petersham-place, Byfleet, Surrey	1
crow, 142, Temple-chambers	1
rney, 134, Temple-chambers, solicitor	1

The Patent List.

This list is compiled from Official sources in the Manchester Technical Laboratory, under the immediate supervision of George E. Davis and Alfred R. Davis, who report professionally upon the value of Chemical Patents.

APPLICATIONS FOR LETTERS PATENT.

Manufacture of Peat Fuel. G. Angel. 4,982. March 14.
Separation of Copper, Nickel, and Cobalt. J. D. Coppet. 4,997. March 14.
Smoke Washing Apparatus. R. E. P. Craven. 5,031. March 15.
Improved Disinfecting Compound. J. B. Dewhurst. 5,036. March 15.
Air Filtering and Ventilating Appliances. W. P. Buchan. 5,040. March 15.
Apparatus for Coating and Brushing Tin and Terne Plates. S. Roberts. 5,064. March 15.
Smoke Consuming Furnaces. W. O. Thost. 5,073 March 15.
Preventing the Pollution of the Atmosphere. D. Harwood. 5,077. Mar. 15.
New Colouring Matters. B. Willcox and J. Sturgeon. 5,112. March 15.
Improved Manufacture of Vermillion. H. W. Picton and S. E. Linder. 5,120. March 16.
Magnetic Ore Separators. G. G. Crosby and D. C. A. Thatcher. 5,130. Mar. 16.
Improvements in the Manufacture of Carbonate of Soda with Recovery of Sulphur. A. G. Haddock. 5,195. March 16.
Improved Aluminium, Iron and Chromium Compounds to be used as Mordants. R. H. Pickles. 5,197. March 16.
Improved Apparatus for Purifying Coal Gas. J. Laycock and S. B. Clapham. 5,198. March 16.
Improvements in Fractional Distillation. E. E. Dulier. 5,211. March 16.
Recovery of Sulphur from Gas from Claus' Kilns. A. Allhausen, G. E. Edgell, and W. Russell. 5,225. March 16.
Improvements for Tar Distilling, etc. J. A. Yeadon and W. Addie. 5,238. March 16.
Revivifying Gas, Lime and Analogous Liquids. J. A. Yeadon and W. Addie. 5,239 March 16.
Production of Caustic Soda and Carbonate of Soda by Electrolysis and Apparatus therefor. J. Pedder. 5,245. March 17.
Recovery of Tin and Iron from Tin Scrap. J. G. H. Batchelor and C. T. Batchelor. 5,255. March 17.
Gold and Silver Extracting Apparatus. R. Henderson. 5,258. March 17.
Improvements in Acid Pumps. W. Marsh. 5,263. March 17.
Improvements in the Manufacture of White Lead and Apparatus therefor. J. W. H. James. 5,287. March 17.
Improved Treatment of Bauxite, etc., to obtain Alumina Hydrate, etc. C. J. Bayer. 5,296. March 17.
Improvements in Coating and Finishing Tin Terne and other Plates. G. H. White 5,327. March 17.
Concentrating and Purifying Sulphuric Acid. H. C. Bull. 5,388. Mar. 18.
Secondary Batteries. G. E. B. Pritchett and T. W. Pritchett. 5,409. Mar. 18.
Improvements in the Manufacture of Superphosphates. F. W. Saatmann. 5,411. March 18.
Making Caustic Soda. J. C. Ody. 5,425. March 19.
Ozone Machines. B. J. B. Mills. 5,449. March 19.

Gazette Notices.

PARTNERSHIP DISSOLVED.

J. ALLCOCK AND W. BALL under the style of J. Allcock and Co., Nottingham, lace dressers, bleachers and dyers.

BANKRUPTCY ACTS, 1883 AND 1890.

Receiving Order.

SADLER, D. M., The Thorns, near Stourbridge and Langley, fire-brick manufacturer.

IMPORTS OF CHEMICAL PRODUCTS

AT

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

ONDON.

ending March 19th.

	2 pks.	A. & M. Zimmermann
	3	Barr, Moering & Co.

de—

	4 pks.	R. Morrison & Co.

Acetic Acid—

Holland,	35 pks.	Elkan & Co.
,,	1	J. Owen

Alkali—

France,	200 c.	Arnati & Harrison
Holland,	100	Beresford & Co.

Alum—

Holland,	10 pks.	Ohlenschlager Bros.
,,	54	Magee, Taylor & Co.
,,	300	Ross & Deering

Alumina Sulphate—

Holland,	14 pks.	Petri Bros.

Barytes—

Germany,	19 cks.	S. H. Willoughby
,,	1	J. Kitchen, Ltd.
Holland,	22	W. Harrison & Co.

Barium Chloride—

Germany,	12 pks.	Petri Bros.

Brimstone—

Italy,	5 t.	Typke & King
,,	1	Colthurst & Co.
,,	25	P. W. Hore & Co.
,,	5	Howards & Sons
,,	20	G. Boor & Co.

Caoutchouc—

Germany,	10 c.	L. & I. D. Jt. Co.
Greytown,	10	R. G. Hall & Co.
France,	32	Flageollet & Co.
Aden,	3	S. Figgis & Co.
Madagascar,	32	Procter Bros.
E. Indies,	43	Ross & Deering
Zanzibar,	54	L. & I. D. Jt. Co.
France,	42	,, ,,

Caustic Potash—

France,	55 c.	Petri Bros.

Caustic Soda—

Holland,	100 c.	Beresford & Co.

Chemicals *(otherwise undescribed)*
Holland, £5 J. Smidt
Germany, 50 pks. T. H. Lee
,, 10 Becker & Ulrich
,, 59 A. &. M. Zimmermann
,, £15 A. F. White & Co.
Holland, 10 pks. Phillipps & Graves
Germany, 11 W. Burton & Sons
,, 5 Craven & Co.
,, 35 Phillipps & Graves
Holland, £16 T. H. Lee
,, 1 pk. R. Morrison & Co.
Germany, £12 W. J. Fox

Copper Pyrites—
Spain, 1,901 t. C. Tennant, Sons & Co.

Cream of Tartar—
Italy, 2 pks. E. & E. Arbib
Spain, 11 B. &. F. Wf. Co., Ltd.
,, 15 W. C. Bacon & Co.
France, 12 Smith, Abbott & Co.
,, 5 W. C. Bacon & Co.
,, 10 B. & F. Wf. Co., Ltd.
Holland, 68 Middleton & Co.
France, 4 Ross & Deering
Japan, 1 L. & I. D. Jt. Co.
Italy, 18 Thames S. T. & L. Co., Ltd.

Crotonic Acid—
Holland, 1 pk. R. Morrison & Co.

Dyestuffs—

Argols
Greece, 3 cs. G. N. Souraltz & Co.
Italy, 48 cks. Thames S. T. & L. Co.
Germany, 1 pk J. Knill & Co.
Italy, 1,265 pks. B. Jacob & Sons
Cape, 1 Balfour & Co.

Cochineal—
Canaries, 4 pks. Swainston & Co.

Cutch
Rangoon, 300 pks. Ogelvy & Co.
,, 300 L. & I. D. Jt. Co , Ltd.
E. Indies, 500 Ross & Deering
Rangoon, 1,000 Hoare, Wilson & Co.

Extracts
France, 50 pks. L J. Levinstein & Sons
,, 100 B & F. Wf. Co., Ltd.
,, 70 Carey & Sons
Denmark, 10 Bailey & Leetham
France, 3 Mory & Co.
Austria, 505 A. & J. Humphrey

Gambier
Singapore, 170 pks. J. Swire & Sons
,, 721 Beresford & Co.
,, 206 R. & J. Henderson
,, 70 Hoare, Wilson & Co.
,, 3,020 Adamson, Gilfillan & Co.
,, 427 J. H. & G. Scovell
,, 1,291 L. & I. D. Jt. Co.
,, 436 Brinkmann & Co.

Indigo
E. Indies, 22 chts. Elkan & Co.
,, 87 P. & O. Co.
,, 43 L. & I. D. Jt. Co.
,, 9 Parsons & Keith
,, 60 Union L Co., Ld.
,, 52 Williams, Torrey & Co., Ltd.
Germany, 1 L. & I. D. Jt. Co.

Saffron
Spain, 1 pk. B. & N. Wf. Co., Ltd.
,, 2 L. & I. D. Jt. Co.
,, 1 Price, Hickman & Co
,, 1 Pickford & Co.

Sumac
Cyprus, 105 pks. Cyprus Co , Ltd.
Italy, 750 J. Hitchin, Ltd.

Tanners' Bark
Melbourne, 51 t. Dalgety & Co., Ltd.
Belgium, 38 Arnati & Harrison
U. S., 4 G. & H. Green
,, 24 H. Buckler
Natal, 48 Hicks, Nash & Co.
,, 15 A. & W. Nesbitt

Turmeric
E. Indies, 230 pks. L. & I. D. Jt. Co.

Valonia
Greece, 32 t. J. Graves

Farina—
Germany, 100 pks. Ohlenschlager Bros.
Holland, 10 J. Knill & Co.
,, 50 Prop. Chmblns Wf.
Germany, 100 Prop. Scotts Wf.

Glucose—
Germany, 250 pks. 250 cwts B. & N. Whvs. Co.
,, 100 605 J. Knill & Co.
,, 700 3,400 Prop. Chmbls. Wf.
,, 100 561 Prop. Scotts Wf.
,, 500 500 L. Norman & Co.
Holland, 10 80 J. Knill & Co.
U. S., 230 200 J. Barber & Co.
,, 2,000 2,000 Union Lthrge Co., Ltd.
,, 40 224 J. Keiller & Son
,, 50 280 Ohlenschlager Bros.
,, 50 300 Pillow, Jones & Co.
,, 5,330 10,706 R. G. Hall & Co.
,, 385 1,940 L. Sutro & Co.
,, 100 560 F. Stalschmidt & Co.
,, 180 1,081 Page, Son & East

Magnesium—
Germany, 1 pk. Phillipps, & Graves

Manganese—
Japan, 50 t. G. G. Blackwell

Manure—
Germany, 51 t. F. W. Berk & Co., Ltd.

Nitre—
Chili, 18,075 bgs. W. Montgomery & Co.

Ochre—
Holland, 4 pks. 3 cs. Phillipps & Graves
France, 19 cks. W Harrison & Co.
Belgium, 4 pks. Forwood, Bros. & Co.

Painters' Colours—
France, 7 pks. Bennett S. S. Co., Ltd.
,, 8 cks. R. Baelz & Co.
,, 6 F. C. Smith
U. S., 12 cs. Hernu, Peron & Co.
,, 9 cks. L. & I. D. Jt. Co.
Holland, 3 cs. W. Harrison & Co.
,, 2 cks. R. Baelz & Co.
,, 1 pk. Brasch & Rathenstein
Germany, 1 C. Faust & Co.
U. S , 20 H. &. G. Dutfield
Sweden, 10 pks. W. E. Bott & Co.
Germany, 1 Becker & Ulrich
U. S., 30 cs. W. E. Bott & Co.
France, 3 cks. B. & F. Wf. Co., Ltd.
,, 30 pks. Flageollet & Co.
Germany, 60 T. H. Lee

Paraffin Wax—
U. S., 200 brls. A. Moreland
,, 52 G. H. Frank
,, 202 H. Hill & Sons
,, 792 J. H. Usmar & Co.

Pearl Ashes—
France, 155 c. Petri Bros.

Phosphate Rock—
Belgium, 285 t. Odams Chemi. Mnre. Co
Holland, 29 Anglo-Cntnl. Guano Wks.
U. S., 705 Wyllie & Gordon
Belgium, 250 Lawes Chml. Mnre. Co.
France, 126 ,, ,, ,,

Plumbago—
France, 3 cs. Wallison & Co.
Ceylon, 73 brls. W. H. Sampson
,, 112 Prop. Sun Wf.
Holland, 72 cks. B. Galloway

Potash—
France, 56 c. Weatherley, Mead & Co.

Potassium Bicarbonate—
Holland, 36 cks. A. & M. Zimmermann

Potassium Bromide—
U. S. 10 pks. C. F. Gerhardt

Potassium Sulphate—
France, 500 pks. F. W. Berk & Co
,, 1,998 Anglo-Cntnl. Guano Wks.
Germany, 19 cks. J. Knight & Sons

Quicksilver—
Spain, 3,000 flasks N. M. Rothschild & Sons

Salammoniac—
Holland, 10 pks. G. Perry
,, 20 H. Lorenz

Salt—
Germany, 200 bgs.

Sodium Acetate—
France, 8 pks. S. F. Waters & Co.
,, 9 H. Lorenz
,, 10 Hoare, Wilson & Co.
,, 92 Barr, Moering & Co.

Sodium Sulphide—
Belgium, 20 pks. W. Bauer & Co.

Tartaric Acid—
Holland, 20 pks. Middleton & Co.
,, 24 B. & F. Wf Co., Ltd.
France, 8 ,, ,,

Tartar Lime—
Spain, 21 pks. W. C. Bacon & Co.

Ultramarine—
Belgium, 20 cks. H. Kohnstamm
Germany, 5 pks. H. Brooks & Co.
,, 3 cs. Phillipps & Graves
,, 9 pks. J. Kitchen, Ltd.
Holland, 2 cks. Phillipps & Graves
Germany, 7 pks. H. Lambert
Holland, 7 Halffner, Hilpert & Co.

White Lead—
Germany, 70 cks. J. Kitchen, Ltd.
France, 18 J. Watts & Sons
Belgium, 5 brls. J. L. Lyon & Co.
Germany, 27 cks. Randall Bros.
,, 22 W. Fenton,
Holland, 27 A. & M. Zimmermann
,, 13 Burrell & Co.
,, 39 Colthurst & Harding
,, 6 Blundell, Spence & Co.
,, 95 F. & W. Farmiloe

Zinc Oxide—
U. S., 12 brls. Forster & Gregory
Holland, 625 cks. Soundy & Sons
,, 145 brls. Mashby, Ltd

Zinc White—
Belgium, 50 brls. Arnati & Harrison

LIVERPOOL.

Week ending March 24th.

Ammonium Chloride—
Amsterdam, 2 cks.

Borate—
San Francisco, 220 sks. W. A. Bishop & Co.

Calcium Sulphate—
Trieste, 100 bgs.

Chemicals *(otherwise undescribed.)*
Havre, 10 cs. Cunard S.S. Co.
Rouen, 84 cks.
Rotterdam, 10 bgs. 11 cks.

Copper Pyrites—
Huelva, 3,324 t. Matheson & Co.

Cream of Tartar—
Marseilles, 5 cks.
Alicante, 5
Rotterdam, 2
Barcelona, 5 butts.

Dyestuffs—

Cutch
Rangoon, 2,555 bxs.

Divi divi
Monte Christo, 1,500 s Chalon

Extracts
New York, 23 pks.
Colon, 150 cs. B. Novel
,, 22 Rylands

Fustic
Monte Christo, 51 t. E.Chalon

Gambier
Singapore, 1,286 brls. 137 bgs

Indigo
Calcutta, 113 chts.

Logwood
Old Harbour, 580 t. B. Ha

Myrabolams
Bombay, 8,259 bgs. D. Sa
,, 325 Forbes Forb
,, 800 A. Salm
Calcutta, 2,103 1,000 pkt
Bombay, 1,887

Orchella
Colon, 5 brls. S. I
,, 21

Turmeric
Bombay, 427 bgs.
Calcutta, 500

Valonia
Patras, 200 bgs. C. G. P
,, 284
,, 200 Mavro Valie

Dyestuffs *(otherwise undes*
Carnocim, 54,000 kilos. Leech,

Glucose—
Hamburg, 8 cks.
Rouen, 200 bgs.

Horn Piths—
Pernambuco, 8 t. 600 b

Manganese Ore—
Gothenburg, 150 t. Macqu

Ochre—
Marseilles, 68 cks.
,, 8 brls.
Rouen, 87 cks. Churt

Phosphates—
Ghent, 300 bgs.

Phosphate Rock—
Port Tawpa, 1,621 t. J.

Pitch—
Hamburg, 59 cks.
Marseilles, 73

Potassium Carbonate—
Hamburg, 6 cks.

Saltpetre—
Calcutta, 1,493 bgs.

Soap—
Marseilles, 25 cs. Allan Bro
,, 22 A. Kl
Bordeaux, 1

Soapstone—
Fiume, 205 bgs.
Bordeaux, 100 G. G. Bl

Tartar—
Bordeaux, 4 cks.

Tartaric Acid—
Marseilles, 4 cks.
Rotterdam, 4 20 kgs.

Ultramarine—
Rotterdam, 6 cks. 16 c.

Vaseline—
New York, 5 brls.

White Lead—
Ghent, 12 cks.

Zinc Oxide—
Rotterdam, 10 cks.
Zinc White—
Rotterdam, 10 cks. O. & H. Marcus

GLASGOW.

Week ending March 24th.

Acetate of Lime—
New York, 988 bgs.
Chemicals (*otherwise undescribed*)
Rotterdam, 1 ck. Jas. Rankine & Son
Dyestuffs—
Alizarine
Rotterdam, 1 cs. 99 cks.
Extracts
Ghent, 4 cks.
New York, 40 css.
Indigo
Rotterdam, 8 chts. Jas. Rankine & Son
Sumac
New York, 20 bgs.
Glucose—
New York, 100 brls.
Painters' Colours—
Ghent, 5 css. 3 cks.
Phosphate of Lime & Rock—
Ghent, 59 t.
Potash—
Rotterdam, 32 cks. Jas. Rankine & Son
Sodium Sulphate—
Ghent, 1 ck.
Stearine—
New York, 23 trcs.
Tar—
New York, 655 brls.
Tartar—
Oporto, 7 cks.
White Lead—
Rotterdam, 36 cks.
Ghent, 5
Zinc Ashes—
Ghent, 1 ck.
Zinc Oxide—
Rotterdam, 4 cks. Jas. Rankine & Son
Zinc Sulphate—
Rotterdam, 18 cks. Jas. Rankine & Son
Zinc White—
Rotterdam, 100 cks. Jas. Rankine & Son

HULL.

Week ending March 17th.

Acetic Acid—
Rotterdam, 10 bkts. G. Lawson & Sons
Alumina Sulphate—
Hamburg, 13 cks. Bailey & Leetham
Barytes—
Antwerp, 36 cks.
Bremen, 95
Rotterdam, 22 G. Lawson & Sons
Caoutchouc—
Hamburg, 1 cs. Bailey & Leetham
Chemicals (*otherwise undescribed*)
Antwerp, 10 drms. Wilson, Sons, & Co., Ld.
Stettin, 16 cks. ,,
Hamburg, 42 pks. 7 css ,,
Bremen, 2 cks. 2 bskts. 4 cs. Veltmann & Co.
Rotterdam, 9 W. & C. L. Ringrose
Antwerp, 3 Bailey & Leetham
Dunkirk, 21 90 pks. Wilson, Sons, & Co.
Dyestuffs—
Alizarine
Rotterdam, 33 cks. Hutchinson & Sons
,, 3 pks. G. Lawson & Sons
,, 26 W. & C. L. Ringrose
Madder
Rotterdam, 1 ck. J. Pyefinch & Co.
Myraboiams
Bombay, 7,272 bgs. 595 pks.
Valonia
Zea, 157 t. Dawson Bros.
Farina—
Stettin, 266 bgs. Wilson, Sons, & Co.
Antwerp, 10 Bailey & Leetham
Harlingen, 50
Glucose—
New York, 110 brls. Wilson, Sons, & Co.
,, 290
Kainit—
Hamburg, 380 bgs. Lawson & Sons
Ochre—
Rouen, 138 cks.
Oleine—
Antwerp, 70 brls. Wilson, Son, & Co., Ltd,
Dunkirk, 20 ,,
Phosphate—
Ghent, 204 bgs.
Dunkirk, 300
Pitch—
Hamburg, 55 brls.
Rouen, 45 cks.
Potash—
Dunkirk, 20 dms.
Quicksilver—
Hamburg, 2 btls. Wilson, Sons, & Co., Ltd.
Soda—
Rotterdam, 94 cks. Reckitt & Son
Sodium Nitrate—
Pisagua, 10,577 bgs
Tartaric Acid—
Rotterdam, 3 cks. Hutchinson & Son
Ultramarine
Rotterdam, cs. G. Lawson & Son
Waste Salt—
Hamburg, 32 bgs E. Kipps & Co.
305 J. W. Hill
White Lead—
Rotterdam, 10 cks. F. F. Chambers & Co.
,, 11 Fewster & Sons
Antwerp, 60 Bailey & Leetham
Rotterdam, 9 Sissons Bros. & Co.

TYNE.

Week ending March 19th.

Dyestuffs (*otherwise undescribed*)
Antwerp, 2 pks.
Saltpetre—
Hamburg, 20 cks.
Zinc Oxide—
Antwerp, 26 cks.

GOOLE.

Week ending March 9th.

Acetic Acid—
Rotterdam, 2 cs.
Alum—
Rotterdam, 27 cks.
Caoutchouc—
Boulogne, 5 cks.
Carbonate of Potash—
Hamburg, 38 cks.
Dyestuffs (*otherwise undescribed*)
Boulogne, 32 cks. 34 css.
Dyestuffs—
Alizarine
Rotterdam, 100 pks. 22 cks.
Farina—
Hamburg, 200 bgs.
Glucose—
Dunkirk, 100 bgs.
Phosphate Rock—
Ghent, 800 bgs.
Potash—
Dunkirk, 54 drms. 34 cks.
Sodium Nitrate—
Rotterdam, 3 cks.
Tartaric Acid—
Rotterdam, 2 cks.
Waste Salt—
Hamburg, 486 cks.

GRIMSBY.

Week ending March 12th.

Chemicals (*otherwise undescribed*)
Hamburg, 46 pks. 16 css.
Farina—
Hamburg, 1,225 bgs.
Zinc Ashes—
Antwerp, 16 cks.

EXPORTS OF CHEMICAL PRODUCTS

OF

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending March 23rd.

Acids—
Huelva, 1 cs. £10
Oporto, 3 cks. 24
Cologne, 50 btls. 75
Acetic Acid—
Wellington, 15 cs. 5 cks. £79
Alkali—
Dunedin, 17 c. £38
Alum—
Salonica, 5 t. 15 c. £31
Varna, 1 18 10
Aluminous Cake—
Calcutta, 20 t. £65
Ammonia—
Montreal, 15 pks. £35
Bombay, 2 cs. 13
Ammonium Carbonate—
Paris, 4 t. 1 c. £114
M. Video, 5 cs. 20
Paris, 3 t. 5 c. 92
Bordeaux, 15 cks. 66
Ammonium Sulphate—
Hamburg, 137 t 1 c. £1,490
Dunkirk, 10 110
Surinam, 20 200
Canaria, 1 4 c. 13
Ostend, 50 550
Guadeloupe, 16 1 166
Amorphous Phosphorus—
Hong Kong, 1 c. £10
Hiogo, 33 150
Arsenic—
Buenos Ayres, 20 kgs. £14
Melbourne, 19 c. 13
Barytes Nitrate—
New York, c. £18
Benzoic Acid—
Philadelphia, 1 cs. £7
Borax—
Auckland, 5 c. £25
Boracic Acid—
B. Ayres, 4 cks. £17
Carbolic Acid—
Rotterdam, 9 t. 13 c. £143
Philadelphia, 5 137
Colombo, 7 147
Carbonic Acid Gas—
Colombo, 5 cs. £78
Carbon Bisulphide—
Barbados, 2 t. £27
Caustic Soda—
Cape Town, 4 c. £8
Otago, 4 5
Lyttleton, 5 6
E. London, 17 30
Algoa Bay, 11 25
Zanzibar, 1 t. 9 c. 18
Chemicals (*otherwise undescribed*)
Bombay, 2 cs. £17
Demerara, 3 cks. 15
Calcutta, 1 c. 47
Adelaide, 20 drs. 19
Aden, 10 cs. 9
Madras, 2 19
Citric Acid—
Halifax, 1 ck. £8
Lisbon, 4 c. 32
Hamburg, 1 keg. 12 cks. 103
Copenhagen, 5 c. 38
New York, 1 t. 5 c. 190
Libau, 7 10 1,150
Buenos Ayres, 6 bgs. 43
Philadelphia, 4 t. 10 c. 722
Boston, 2 310
Cape Town, 2 c. 15
Coal Products—
Aniline
Odessa, 4 cks. £135
Adelaide, 1 cs. 10
Boulogne, 1 ck. 34
Anthracene
Rotterdam, 266 cks. £1,248
Dusseldorf, 420 cks. 2,494
Benzol
Rotterdam, 30 puns. 38 cks. 20 dms. £914
Rotterdam, 97 cks. 50 dms. 30 puns. £2,031
Coal Products
Sydney, 100 dms. £26
Coal Tar
Cape Town, 2 cs. £19
Naphtha
Melbourne, 10 drs. £13
Ghent, 7 brls, 20
Calais, 2 runs. 12
Naphthaline
New York, 80 cks. £118
New Orleans, 21 39
Pitch
Antwerp, 127 t. £222
Auckland, 24 pks. 19
New York, 2,000 cks. 993
Boston, 250 122
Philadelphia, 300 149
Alexandria, 200 200 brls. 135
Dunkirk, 1,575 tns. 2,398
Trouville, 153 250
St. Malo, 795 1,200
Naples, 1,103 1,977
Ancona, 1,103 1,710
St. Johns, 50 brls. 27
Pitch
Constantinople, 400 brls. £160
Baltimore, 1,511 bgs. 750 cks. 510
St. Malo, 795 tns. 1,252
Tar
Galatz, 100 runlets 50 brls. £70
Baltimore, 250 cks. 144
Melbourne, 50 drs. 10
Toluol
Rotterdam, 20 puns. £160
Copper Sulphate—
Antwerp, 8 t. £114
Hobart, 2 23
Rouen, 8 130
Bordeaux, 24 372
Colombo, 7 t. 6
Pt. Chalmers, 1 t. 15
Cream of Tartar—
Melbourne, 1 t. £90
Wellington, 18 c. 85
Dunedin, 5 23
Sydney, 10 55
Cape Town, 2 10
Auckland, 10 45
Disinfectants—
Natal, 13 pks. £37
New York, 5 cs. 20
Calcutta, 25 12
Dunedin, 7 55

Fluoric Acid—
Algoa Bay, 1 cs. £6

Guano—
Guadeloupe, 246 t. £2,460
Suola Mar, 10 t. 110

Hypophosphite of Lime—
Philadelphia, 1 t. £269
Boston, 4 c. 48

Manure—
Kingston, 5 t. 16 c. £26
Rochefort, 270 1,240
Barbados, 460 1,800
Surinam, 40 420
Berbice, 20 205
New York, 2 30
Philadelphia, 15 11
Guadeloupe, 100 800
Antigua, 50 546
St. Kitts, 4 42
Rouen, 160 650
Gothenburg, 77 19 323
Valencia, 705 18 7,067
Oporto, 10 1 100
Malaga, 60 2 480
Ghent, 50 525
Hamburg, 313 16 2,558
Stettin, 12 54
Rotterdam, 32 135
Demerara, 44 460
Trinidad, 1 5 19
S. Lucia, 8 18 130
Genoa, 50 1 440
Jersey, 12 8 130
Guernsey, 2 19

Mirbane Oil—
New York, 20 cs. £62

Muriatic Acid—
Oporto, 12 c. £10

Nitric Acid—
Jersey, 24 carboys £46

Phosphorus—
Algoa Bay, 2 cs. £13
Wellington, 4 c. 32

Potash—
Bombay, 2 cs. £15

Potash Crystals—
Halifax, 16 c. £37

Potash Salts—
Natal, 25 t. £3,495

Potassium Chlorate—
Hamburg, 13 t. £19

Potassium Cyanide—
Calcutta, 7 c. £17
Townsville, 11 56

Potassium Sulphate —
Barbados, 5 t. 14 c. £54

Salammoniac—
Paris, 2 t. 4 c. £77
Buenos Ayres, 6 10
Varna, 6 9

Saltpetre—
Savanilla, 2 t. 3 c. £49
Wellington, 10 11
Bahia, 1 8 32

Sheep Dip—
Calcutta, 69 pks. £35
E. London, 20 cs. 150 drs. 86

Silver Nitrate—
Bombay, 1 cs. £50
Adelaide, 1 56

Soda—
Singapore, 6 c. £6
Trinidad, 10 3
Cape Town, 3 t. 12
Salonica, 1 t. 1 c. 4
Sydney, 11 3
Colombo, 7 3

Soda Crystals—
Cape Town, 1 t. 13 c. £5
Natal, 7 1

Soda Salts—
New York, 2 t. 11 c. £25

Sodium—
Townsville, 2 c. £20

Sodium Bicarbonate—
St. Johns, N. F., 5 c. £2
Trinidad, 1 t. 8
Melbourne, 10 c. 4
Demerara, 5 2
Dunedin, 2 t. 10 c. 17
Algoa Bay, 7 6

Sodium Bichromate—
M. Video, 11 cs. £16

Sodium Carbonate—
Demerara, 10 c. £4
Las Palmas, 19 7
Natal, 5 11

Sodium Hypophosphite—
Boston, 2 c. £32
Calcutta, 5 11

Sodium Nitrate—
New York, ck. £10

Sodium Sulphate—
Ghent, 50 tns. £75

Strontium Nitrate—
New York, 5 t. 1 c. £134

Sulphur—
E. London, 120 pks. £65
Pt. Elizabeth, 165 90
Madeira, 521 brls. 460
Lisbon. 25 211
Algoa Bay, 4 t. 9 c. 50 kgs. 88

Sulphuric Acid—
Colombo, 24 cs. £24
Madras, 80 95
Zanzibar, 10 15
Aden, 10 10
Algoa Bay, 14 t. 15 c. 62

Superphosphate—
Las Palmas, 30 t. £153
Guadeloupe, 40 120

Tartaric Acid—
Buenos Ayres, 36 cks. £180
Melbourne, 10 c. 60
Lisbon, 3 17
Wellington, 5 27
Algoa Bay, 2 1 cs. 18
Sydney, 10 65

LIVERPOOL.

Week ending March 23rd.

Acetic Acid—
Cape Town, 11 c. £10

Alum—
Ancona, 4 t. £24
Portland, Me., 6 10 c. 39
Galatz, 1 10 9
Varna, 1 6
Portland. Or., 12 10 75
Valparaiso, 2 15 16
Lisbon, 5 26

Ammonia—
Valparaiso, 8 c. £14
B. Ayres, 1 t. 5 185

Ammonium Carbonate—
Genoa, 10 c. 1 q. £17
Valparaiso, 1 t. 37
Rangoon, 9 16
New York, 9 6 3 295
St. John's, N.B., 10 16

Ammonium Chloride—
Antwerp, 7 c. 2 q. £9

Ammonium Sulphate—
Leghorn, 10 t. 9 c. £115
Barbadoes, 71 3 2 q. 790
Nantes, 20 4 222
Marseilles, 10 1 108
Cheriban, 52 3 559
Malaga, 119 10 1,197
Valencia, 149 13 1,598
Rouen, 4 12 50

Bleaching Powder—
Baltimore, 75 cks.
Boston, 610
Calcutta, 96
Colombo, 1
New York, 212 20 bxs.
Oporto, 49
Portland, Me., 19
Bombay, 50 cs.
Genoa, 67
Messina, 10
New Orleans, 15 brls.
Philadelphia, 112

Borax—
Piræus, 9 c. 1 q. £14
Malaga, 6 9
Christiania, 2 t. 10 c. 70
Cienfuegos, 6 10
Hamburg, 18 2 28
Montreal. 17 24

Boracic Acid—
Bordeaux, 1 t. 1 c. 3 q. £33
Yokohama, 2 75

Brimstone—
Calcutta, 4 t. 19 c. 2 q. £32

Carbolic Acid—
Para, 3 c. 3 q. £5
Baltimore, 16 cs. 113
New York, 9 t. 1 3 378

Caustic Potash—
Rotterdam, 7 c. £8

Caustic Soda—
Algoa Bay, 8 cs.
Antwerp, 4 dms.
Bahia, 40
Boston, 135
Carthagena, Sp., 18
Colombo, 12
Genoa, 230
Havana, 40
Hiogo, 150
Madrid, 120
Maranham, 20
Pernambuco, 65
Rouen, 37
St. Domingo, 72
Samarang, 25
Seville, 125
Bombay, 64
B. Ayres, 69
Cadiz, 16 brls.
Calcutta, 107
Cape Town, 30
Catania, 10
Ferrol, 6
Fiume, 53
Halifax, 36
Larnaca, 1 ck.
Maceio, 30
Malaga, 50 kgs. 30 12
Messina, 36
M. Video, 50
Montreal, 35
New Orleans, 100
New York, 1,882 60 15 bxs.
Oporto, 10
Philadelphia, 75
Portland, Or., 100
Rotterdam, 46
Santander, 30
Yokohama, 270

Chemicals *(otherwise undescribed)*
Odessa, 11 t. £347
Larnaca, 1 bx. 10
Galatz, 14 c. 22
Genoa, 2 10 87
Antwerp, 5 8
Calcutta, 5 47
Marseilles, 1 15 43

Citric Acid—
Montreal, 5 c. £38

Copperas—
M. Video, 5 t. 3 c. £10
Varna, 1 7 1 q. 3

Copper Sulphate—
Mexico City, 10 t. 3 q. £153
Barcelona, 5 13 c. 2 85
Marseilles, 5 3 75
Odessa, 6 13 3 91
Genoa, 17 18 242
Aleppo, 10 9
Bordeaux, 91 6 2 4,195
Syra, 13 1 10
Talcahuano, 1 5 19
Venice, 10 2 146
Marseilles, 137 5 2 2,170
M. Video, 1 2 2 18
Nantes, 74 12 1 1,206
Copenhagen, 2 9 30
Rouen, 44 18 673
Tarragona, 5 12 80
Ghent, 8 15 1 126
Dunkirk, 10 7 1 184
Leghorn, 1 16 3 26

Disinfectants—
Bombay, 3 t. £20

Epsom Salts—
Bombay, 100 kgs.
Rio de Janeiro, 60

Gypsum—
New York, 36 t. 16 c. £126

Magnesium Chloride—
Rangoon, 16 c. 2 q. £11

Manure—
Valencia, 115 t. 3 c. 2 q. £310
Antwerp, 24 12 2 93
St. Malo, 300 6 1 1,518
Manila, 6 67

Muriate of Lime—
Sydney, 10 t. £23

Oxalic Acid—
Bombay, 10 kgs. £9

Phosphorus—
Vera Cruz, 20 cs. £95
Guadalagura, 18 89
Calaya, 5 35
Hiogo, 10 94
Shanghai, 4 25

Picric Acid—
New York, 14 c. 1 q. £67

Pitch—
Pernambuco, 8 t.
Ancona, 475

Potassium Bichromate—
Piræus, 7 c. 2 q. £11
Antwerp, 2 t. 10 3 85

Potassium Chlorate—
Boston, 10 t.
Hiogo, 15
Tampico, 10 c.
Oporto, 5
Genoa, 2 10
Gothenburg, 3 10
New York, 11 6 1 q.
Odessa, 2
Kobe, 12 10
Valparaiso, 8 2
Corunna, 10
Yokohama, 6 10

Potassium Cyanide—
Natal, 1 t. 5 c. 3 q.

Potassium Nitrate—
Trinidad, 1 t. 3 c. 1 q.

Potassium Prussiate—
B. Ayres, 11 c.

Potassium Silicate—
Amsterdam, 1 t. 4 c. 2 q.

Potassium Stannate—
Bombay, 16 c. 2 q.

Salammoniac—
Smyrna, 1 t.
Ibrail, 1 1 q.
Kerassunde, 10 c. 1
Varna, 9

Salt—
Melbourne, 170 t.
Opobo, 50
Portland, Me., 75
Rotterdam, 181
Rouen, 10
Sierra Leone, 350
Sydney, 768
Wellington, 579
Calcutta, 8,647
Gd. Bassa, 24½
Hamburg, 147 13 c.
Isles de Los, 16
Savannah, 10 1
New Orleans, 100
New York, 130
Portland, Or., 260
Abonnema, 14
Antwerp, 300
Assinee, 5
Bakana, 20
Black Point, 15
Boston, 80
Callao, 1 1
Cameroons, 50
Conakry, 25
Demerara, 51 13
Dixcove, 3
Faroe Islands, 154
Ghent, 50½
Loango, 11½
Sydney, 50
Sulymah, 9
Valparaiso, 200
Warre, 6

Salt Cake—
Baltimore, 239 t. 9 c.
Philadelphia, 311 13

Saltpetre—
Barcelona, 3 t. 15 c.
Bahia, 4
Pernambuco, 2 13 2 q.
Rio de Janeiro, 17 2

Sheep Dip—
Pt. Natal, 3 c.

Soap—
St Lucia, 46 bxs.
Shanghai, 2,417
Singapore, 25
Teneriffe, 235
Trinidad, 300
Alexandria, 114
Algoa Bay, 2,000
Barbadoes, 100
Bombay, 221 30 cs.
Buenos, 30
Calcutta, 4 500 bdl
Curacao, 300
Demerara, 300
E. London, 673
Leghorn, 8
Liege, 400
Melilla, 20
Rotterdam, 380
Sierra Leone, 100 1
Surinam, 75
Guadeloupe, 2,000
Hong Kong, 10
Iquitos, 100
Isles de Los, 100
Savannah, 300
Lisbon, 6
Mossel Bay, 1,375
New Orleans, 100
New York, 290 30
Opobo, 2,120

1
abeth, 50
al, 688
's, Nfd., 140
e, 47
i, 650 400 css.
25
100
8
100
astle, 25
own, 4,550
), 12 18
285
20
1
ur, 361
sa, 100
uary, 339

lh—
e, 118 brls. 33 cks.
re, 463
238 tcs. 259 1,000 bgs.
ena, Sp., 6
8
, 4
am, 30 25
me, 68
al, 400
5
lphia, 298 240 1,267 tcs.
d, Or., 20
oke, 192
es, 150
15
, 5
ork, 225 1,246
ncisco, 141

rystals—
ningo, 134 brls.
ai, 16
56
a, 150 kgs.
, 20
, 7
100 50 cks.
d, Me., 48
ncisco, 334

l Biborate—
iso, 2 t. 2 c. £60
lam, 1 3 q. 31
3 5 98
es, 2 18 3 88
ma, 2 19 2 90

l Bicarbonate—
le, 175 kgs.
dretta, 20 40 brls.
dria, 20
t, 20
urg, 20
75
32
d, Or., 170 cks.
lam, 20 22
50
, 100
dam, 25
p, 120
na, 300 25 5
y, 250
es, 15 css.
50 20
t, 100
urg, 20
115
700
, 18
, 532
, 50
aiso, 10

l Bichromate—
a, 6 cks.
rp, 4 c. 3 q. £11

l Bisulphite—
, 1 t. £6

l Carbonate—
ta, 36 brls.
ork, 56

l Chlorate—
20 kgs.

l Hyposulphite—
rleans, 500 kgs.

l Nitrate—
, 20 t. 1 q. £183
h, 4 38

l Silicate—
la, 8 cks.
, 32
, 13
20 brls.
s, 8
n, 4
ham, 5
ia 5

Sodium Sulphite—
Vera Cruz, 10 cks.

Sodium Sulphate—
Leghorn, 1 t. 2 c. £6

Stannous Chloride—
Trinidad, 1 t. 19 c. 1 q. £87

Sulphuric Acid—
Rio de Janeiro, t. 12 c. 2 q. £35

Tartaric Acid—
Piræus, 1 c. £8
Talcahuano, 1 7

Zinc Chloride—
Bombay, 12 t. 10 c. £200
Oporto, 3 17 67

GLASGOW.

Week ending March 24th.

Acid—
Bombay, 269 t 2 c. £2,790

Ammonium Sulphate—
Martinque, 27 t. 13 c. £330
Trinidad, 6 42 63
Demerara, 236 2,391
New York, 32 450
Nantes, 6 2 65

Benzol—
Rotterdam, 9 drms. £100

Bleaching Powder—
Melbourne, 150 c. £49
Sydney, 6¼ t. 41

Borax—
Melbourne, 22¼ c. £34

Chloride of Lime—
New York, 49 t. 18 c. £411

Coal Tar Pitch—
Boston, 208 t. 7 cwt. £419

Copperas—
Nantes, 3 t. 2½ c. £42

Dyestuffs—
Logwood
Melbourne, 414½ c. £240

Epsom Salts—
Sydney, 103⅜ c. £41

Manure—
Martinique, 114 t. 15½ c. £1,307
Demerara, 195 12½ 1,974
Rouen, 10 1 80

Painters' Colours—
Trinidad, 1 t. 1½ c. £20
Sydney, 101
New York, 86

Paraffin Wax—
Rouen, 1 t. 4½ c. £48. 10s
Melbourne, 23 2 7.7
Hong Kong, 2 1½ 56
Japan, 32 17½ 897
Cape Colony, 9 4½ 153

Pitch—
Hungary, 215 t. 13 c. £269

Potassium Bichromate—
Rouen, 15 t. 11 c. £473
Antwerp, 10 10¼ 265
Boston, 201 352
Rotterdam, 31 cks. 260
Nantes, 131 cwt. 205

Potassium Prussiate—
Rouen, 5 t. 7 c. £298
Boston, 110

Saltcake—
Antwerp, 262 t. 16½ c. £520

Sodium Bichromate—
Rouen, 14 t. 8½ c. £320
New York, 335 483
Boston, 62 79
Rotterdam, 6 cks. 65

Sodium Nitrate—
New York, 20 t 16½ c. £200

Superphosphate—
Trinidad, 15 t. £54

White Lead—
Sydney, 10 t. £227

HULL.

Week ending March 15th.

Aluminium—
Antwerp, 1 cs.

Bleaching Powder—
Bombay, 160 drms.
Gothenburg, 15 cks.

Benzoline—
Ghent, 15 cks.

Borax—
Stettin, 3 cks.

Caustic Soda—
Danzig, 36 drms.
Antwerp, 1

Chemicals (*otherwise undescribed*)
Amsterdam, 12 pks.
Alexandria, 10 cks.
Bremen, 4 4 css.
Bombay, 115
Bergen, 6
Copenhagen, 5 cs. 10 2 pks.
Christiansand, 10
Christiania, 14 cks. 22 pks. 776 slabs.
Danzig, 41 10 9 css.
Drontheim, 326 slabs.
Gothenburg, 57 6 cs.
Hamburg, 10 100
Konigsberg, 1 5 pks.
Kurrachee, 40 100
New York, 60 css.
Reval, 12 240
Rotterdam, 2 cks. 10 css.
Stettin, 5 cs. 4 cks. 2 pks.

Copper Precipitate—
Rotterdam, 2,930 bgs.

Cotton Seed Oil—
Antwerp, 783 cwt.
Bremen, 640
Bordeaux, 206
Copenhagen, 187
Flushing, 588
Gothenburg, 110
Hamburg, 1,650
Konigsberg, 100
Rotterdam, 2,880
Stettin, 1,960

Dyestuffs (*otherwise undescribed*)
Christiania, 25 bgs.
Danzig, 1 cks.
Dunkirk, 23
Hamburg, 1 cs.
Rouen, 1
Reval, 1 ck.
Stettin, 1

Linseed Oil—
Antwerp, 1 cwt.
Alexandria, 148
Bremen, 17
Bergen, 34
Copenhagen, 234
Christiania, 208
Christiansand, 195
Hamburg, 249
Kurrachee, 60
Rotterdam, 156

Manure—
Drontheim, 776 bgs.
Dunkirk, 50
Ghent, 969

Ochre—
Dunkirk, 3 cks.

Painters' Colours—
Antwerp, 2 cs. 1 cks. 20 drms. 95 pks.
Amsterdam, 10
Bremen, 1 1
Bordeaux, 1
Bombay, 76 11 2 80
Bergen, 3 12 18
Copenhagen, 1 22 36
Christiansand, 12
Christiania, 15 80
Christiansand, 1 172
Danzig, 4 cs.
Drontheim, 16
Dunkirk, 2
Flushing, 1
Gothenburg, 16
Kurrachee, 2
New York, 90 50
Rotterdam, 19 1 css. 1
Stettin, 18

Pitch—
Antwerp, 260 t.
Dunkirk, 90
New York, 500 bgs.

Soap—
Bergen, 38 css.
Christiania, 20 20 bls.

Tar—
Amsterdam, 10 cks.
Copenhagen, 17

Yarnish—
Antwerp, 5 cs. 6 cks. 3 drms.
Amsterdam, 10
Bombay, 113
Bergen, 2
Copenhagen, 6
Christiania, 1
Gothenburg, 1
Ghent, 1 2
Kurrachee, 100

TYNE.

Week ending March 19th.

Alkali—
Rotterdam, 93 c.
Barcelona, 24
Gothenburg, 96
Copenhagen, 185
New York, 996

Alum—
Danzig, 142 c.

Barytes Carbonate—
New York, 300 c.

Barytes Hydrate—
Danzig, 119 c.

Barium Sulphate—
New York, 5 c.

Bleaching Powder—
Rotterdam, 875 c.
Danzig, 657
Drontheim, 204
Copenhagen, 254
Gothenburg, 299

Caustic Soda—
Rotterdam, 1 c.
Danzig, 98
Copenhagen, 58
New York, 1,450
Gothenburg, 2,002

Farina—
Drontheim, 3 t.

Gypsum—
New York, 2,216 c.

Litharge—
Gothenburg, 11 c.

Magnesia—
Barcelona, 24 c.
Copenhagen, 2

Magnesium Carbonate—
New York, 62 c.

Naphtha—
Bergen, 8 c.

Salammoniac—
Copenhagen, 11 c.

Soda—
Stavanger, 106 c.
New York, 2,000

Soda Ash—
Arendal, 305 c.
Danzig, 402
Gothenburg, 449
Copenhagen, 303

Sodium Hyposulphite—
Barcelona, 62 c.
New York, 5,030 c.

Sulphur—
Danzig, 1,000 c.
Gothenburg, 400

White Lead—
New York, 128 c.

GOOLE.

Week ending March 9th.

Chemicals (*otherwise undescribed*)
Antwerp, 5 cks.
Boulogne, 8 drms.
Calais, 10 tierces.
Rotterdam, 226 cks.

Coal Products—
Ghent, 12 cs.

Dyestuffs (*otherwise undescribed*)
Antwerp, 3 cks. 5 dms.
Ghent, 1 dm.

Manure—
Bruges, 801 bgs.
Ostend, 50
Ghent, 515

Pitch—
Antwerp, 526 t.

GRIMSBY.

Week ending March 12th.

Chemicals (*otherwise undescribed*)
Antwerp, 8 cks. 8 pks
Hamburg, 6 cs. 137 cks. 15 drs.

Coal Products—
Dieppe, 80 cks. 6 cs.

PRICES CURRENT.

WEDNESDAY, March 30th,

PREPARED BY HIGGINBOTTOM AND CO., 116, PORTLAND STREET, MANCHESTER.

The values stated are F.O.R. *at maker's works, or at usual ports of shipment in U.K. The price in different localities ma*

	£	s.	d.
Acids:—			
Acetic, 25 °/₀ and 40 °/₀ .. .. per cwt.	7/- & 11/-		
,, Glacial .. .. ,,		50/-	
Arsenic, S.G., 2000° .. .. ,,	0	13	6
Fluoric .. .. per lb.	0	0	3¼
Muriatic (Tower Salts), 30° Tw. .. .. .. per bottle	0	0	10
,, (Cylinder), 30° Tw. .. .. ,,	0	3	0
Nitric 80° Tw. .. .. per lb.	0	0	2¼
Nitrous .. .. ,,	0	0	1¼
Oxalic .. .. nett ,,	0	0	3
Phosphoric, 1750° .. .. ,,	0	1	2½
Picric .. .. ,,	0	0	10¼
Sulphuric (fuming 50 °/₀) .. .. per ton	15	10	0
,, (monohydrate) .. .. ,,	5	10	0
,, (Pyrites, 168°) .. .. ,,	3	5	0
,, (,, 150°) .. .. ,,	1	5	0
,, (free from arsenic, 145°) .. .. .. ,,	1	7	6
Sulphurous (solution) .. .. ,,	2	15	0
Tannic (pure) .. .. per lb.	0	1	2
Tartaric .. .. ,,	0	1	0
Arsenic, white powdered .. .. nett per ton	10	15	0
Alum (loose lump) .. .. ,,	5	5	0
Alumina Sulphate (pure) .. .. ,,	5	0	0
,, ,, (medium qualities) .. .. .. ,,	4	15	0
Aluminium .. .. per lb. 2s. 8d. to	0	3	2
Ammonia, ·880=28° .. .. per lb.	0	0	3
,, =24° .. .. ,,	0	0	1¾
,, Carbonate .. .. nett ,,	0	0	3¼
,, Muriate .. .. per ton	21	0	0
,, ,, (sal-ammoniac) 1st & 2nd .. per cwt.	35/- & 33/-		
,, Nitrate .. .. per ton	40	0	0
,, Phosphate .. .. per lb.	0	0	10½
,, Sulphate (grey), London .. .. .. per ton	10	7	6
,, ,, (grey), Hull .. .. ,,	10	5	0
Aniline Oil (pure .. .. per lb.	0	0	7½
Aniline Salt ,, ... ,,	0	0	6¾
Antimony .. .. per ton	45	10	0
,, (tartar emetic) .. .. per lb.	0	1	0
,, (golden sulphide) .. .. ,,	0	0	10
Barium Chloride .. .. per ton	7	10	0
,, Carbonate (native) .. .. ,,	3	10	0
,, Sulphate (native levigated) .. .. .. ,,	45/- to 75/-		
Bleaching Powder, 35 % .. .. nett ,,	7	10	0
,, Liquor, 7 % .. .. ,,	2	10	0
Bisulphide of Carbon .. .. ,,	11	15	0
Chromium Acetate (crystal .. .. per lb.	0	0	6
Calcium Chloride .. .. per ton	2	5	0
China Clay (at Runcorn) in bulk .. .. .. ,,	17/6 to 35/-		
Coal Tar Dyes:—			
Alizarine (artificial) 20 % .. .. per lb.	0	0	8¾
Magenta .. .. ,,	0	3	9
Coal Tar Products			
Anthracene, 30 % A, f.o.b. London .. per unit per cwt.	0	1	2½
Benzol, 90 % nominal .. .. .. per gallon	0	1	11
,, 50/90 ,, ... ,,	0	1	6
Carbolic Acid (crystallised 40°) .. .. .. per lb.	0	0	5
,, (crude 60°) .. .. per gallon	0	1	2
Creosote (ordinary) .. .. ,,	0	0	1
,, (filtered for Lucigen light) .. .. ,,	0	0	2
Crude Naphtha 30 % @ 120° C. .. .. .. ,,	0	0	11
Grease Oils, 22° Tw. .. .. per ton	2	5	0
Pitch, f.o.b. Liverpool or Garston .. .. .. ,,	1	14	0
Solvent Naphtha, 90 % at 160° .. .. .. per gallon	0	1	0
Coke-oven Oils (crude) .. .. ,,	0	0	3
Copper .. .. per ton	45	17	6
,, Sulphate .. .. ,,	14	15	0
,, Oxide (copper scales) .. .. ,,	45	0	0
Glycerine (crude) .. .. ,,	13	0	0
,, (distilled S.G. 1250°) .. .. ,,	45	0	0
Iodine .. .. nett, per oz.	0	0	9
Iron Sulphate (copperas) .. .. per ton	1	12	6
,, Sulphide (antimony slag) .. .. ,,	2	0	0
Lead (sheet) for cash .. .. ,,	12	5	0
,, Litharge Flake (ex ship) .. .. ,,	14	5	0
,, Acetate (white ,,) .. .. ,,	25	10	0
,, ,, (brown ,,) .. .. ,,	17	10	0
,, Carbonate (white lead) pure .. .. .. ,,	20	0	0
Nitrate .. .. ,,	20	5	0
Lime, Acetate (brown) .. .. per ton	£ 6		
,, ,, (grey) .. .. ,,	10		
Magnesium (ribbon and wire) .. .. per oz.	0		
,, Chloride (ex ship) .. .. per ton	2		
,, Carbonate .. .. per cwt.	1		
,, Hydrate .. .. per ton.	17		
,, Sulphate (Epsom Salts) .. .. .. per ton	2		
Manganese, Sulphate .. .. ,,	17		
,, Borate .. .. per cwt.	2		
,, Ore, 70 % .. .. per ton	4		
Methylated Spirit, 61° O.P. .. .. per gallon	0		
Naphtha (Wood), Solvent .. .. ,,	0		
,, ,, Miscible, 60° O.P. .. .. .. ,,	0		
Oils:—			
Cotton-seed .. .. per ton	19		
Linseed .. .. ,,	20		
Lubricating, Scotch, 890°—895° .. .. .. ,,	7		
Petroleum, Russian .. .. per gallon	0		
,, American .. .. ,,	0		
Potassium (metal) .. .. per oz.	0		
,, Bichromate .. .. per lb.	0		
,, Carbonate, 90% (ex ship) .. .. .. per ton	18		
,, Chlorate .. .. per lb.	0		
,, Cyanide, 98% .. .. ,,	0		
,, Hydrate (Caustic Potash) 80/85 % .. per ton	22		
,, ,, (Caustic Potash) 75/80 % .. ,,	21		
,, ,, (Caustic Potash) 70/75 % .. ,,	20		
,, Nitrate (refined) .. .. per cwt.	1		
,, Permanganate .. .. per cwt.	3		
,, Prussiate Yellow .. .. per lb.	0		
,, Sulphate, 90 % (ex ship) .. .. .. per ton	9		
,, Muriate, 80 % (do.) .. .. .. ,,	7		
Silver (metal) .. .. per oz.	0		
,, Nitrate .. .. ,,	0		
Sodium (metal) .. .. per lb.	0		
,, Carb. (refined Soda-ash) 48 % .. nett per ton	6		
,, ,, (Caustic Soda-ash) 48 % . ,, ,,	5		
,, ,, (Carb. Soda-ash) 48% .. .. ,, ,,	5		
,, ,, (Carb. Soda-ash) 58 % .. .. ,, ,,	6		
,, ,, (Soda Crystals) .. .. .. ,, ,,	3		
,, Acetate (ex-ship) .. .. ,,	16		
,, Arseniate, 45 % .. .. ,,	10		
,, Chlorate .. .. per lb.	0		
,, Borate (Borax) .. .. nett, per ton.	30		
,, Bichromate .. .. per lb.	0		
,, Hydrate (77 % Caustic Soda) (f.o.b.) nett pr. ton (10 ton lots)	11		
,, ,, (74 % Caustic Soda) ,, ,, ,, (10 ton lots)	11		
,, ,, (70 % Caustic Soda) ,, ,, ,, (10 ton lots)	10		
,, ,, (60 % Caustic Soda) .. ,, ,, (10 ton lots)	9		
,, ,, (60 % Caustic Soda, cream) (f.o.b.) ,, (10 ton lots)	9		
,, Bicarbonate .. .. ,,	6		
,, Hyposulphite .. .. ,,	7		
,, Manganate, 25% .. .. ,,	9		
,, Nitrate (95 %) ex-ship Liverpool .. .. per cwt.	0		
,, Nitrite, 98 % .. .. per ton	30		
,, Phosphate .. .. ,,	15	1	
,, Prussiate .. .. per lb.	0		
,, Silicate (glass) .. .. per ton	5		
,, ,, (liquid, 100° Tw.) .. .. .. ,,	4		
,, Stannate, 40 % .. .. per cwt.	3		
,, Sulphate (Salt-cake) .. .. per ton.	1	1	
,, ,, (Glauber's Salts) .. .. ,,	1	1	
,, Sulphide .. .. ,,	7	1	
,, Sulphite .. .. ,,	6	1	
Strontium Hydrate, 100% .. .. ,,	8	1	
Sulphocyanide Ammonium, 95 % .. .. per, lb.	0		
,, Barium, 95 % .. .. ,	0		
,, Potassium .. .. ,	0		
Sulphur (Flowers) .. .. per ton.	10		
,, (Roll Brimstone) .. .. ,,	8		
,, Brimstone: Best Quality (nominal) .. ,,	6	1	
Superphosphate of Lime (26 %) .. .. ,,	2		
Tallow .. .. ,,	26	1	
Tin (English Ingots) .. .. ,,	92	1	
,, Crystals .. .. per lb.	0		
Zinc (Spelter) .. .. per ton	21		
,, Chloride (solution, 96° Tw.) .. .. ,,	6	1	

THE

CHEMICAL TRADE JOURNAL

AND

OIL, PAINT and COLOUR REVIEW.

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ADVERTISEMENT.

(weight about 44 tons) of STAR ANTIMONY recovered from the r, "Crystal," lately sunk near the Tyne entrance.

LOVER & SON, instructed by the Tyne provement Commissioners (pursuant to the statutory provisions in that ill sell the above-mentioned Antimony by public auction, on Wednesday, at 3 o'clock prompt, at the Central Station Hotel, Newcastle-upon-Tyne. imony will be sold in convenient lots; and it may be seen on any day, o a.m. and 4 p.m., at the Commissioners' Warehouse, Albert Edward er Tyne.

By order,
R. URWIN, Secretary.

provement Commissioners' Office,
astle-upon Tyne, April 5, 1892.

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unications for the Editor, if intended for insertion in the week's issue, should reach the office not later than **Tuesday ng.**

rs are invited to forward items of intelligence, or cuttings from spapers, of interest to the trades concerned.

s, reports, and correspondence on all matters of interest to the and allied industries, home and foreign, are solicited, ndents should condense their matter as much as possible, one side only of the paper, and in all cases give their names resses, not necessarily for publication. Sketches should be eparate sheets.

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isements intended for insertion in the current week's issue ach the office by **Wednesday morning** at the latest.

CURRENT TOPICS.

MANUFACTURERS AND THEIR EFFLUENTS.

THE question of what manufacturers are likely to be requested to do in the matter of purifying their effluents, in such a way as to render them fit to enter the rivers upon which their works are situated, has been troubling the minds of those who have been doing nothing considerably; while those who have adopted some method are naturally anxious to know if the steps they have taken effect such a purification as will satisfy the requirements of the Rivers Irwell and Mersey Joint Committee.

The meetings of this Committee have on almost every occasion brought fresh evidence of the determined efforts which are being made to cause the cessation of pollution, and in the account of the proceedings of the last meeting (which are given in full elsewhere in this issue), manufacturers will find the preliminary report of Sir. H. E. Roscoe. which contains some indication of the line of action which the Committee are likely to adopt towards them.

It will, no doubt, be an indirect consolation to manufacturing polluters to learn at the outset that, in the opinion of their *Magnus Apollo*, their contributions to the rivers' impurities are not so serious as the pollution arising from sewage.

Still there is not the slightest doubt but what manufacturers will have to make an effort to lessen the amount of polluting liquid they turn into the rivers, and the sooner they prepare themselves, in accordance with suggestions thrown out in the preliminary report, the better it will be for them when the final report is issued.

The cry of handicapping manufacturers by such regulations, when they have to cope with foreign competition, is to a large extent silenced by the remarks of the chairman, and the action of the State in the prevention of the pollution of the atmosphere of Chicago by smoke, is a precedent that this argument is only likely to carry weight when the claims of the public weal have first been satisfied.

According to the report numerous works have been visited, those typical of the various industries carried on on the banks of the rivers Irwell and Mersey having been selected, and a record of what is being done to militate pollution is given. In the calico printing and dyeing works it is stated that efficient means for the purification of the effluents are well known, but we think the efficiency of many of these methods depends to a large extent upon whether manufacturers make a point of separating the wash waters from the impurer effluents.

The difficulty of treating the wash waters from wool scouring and similar works is known to be considerable, but it is not by any means an insurmountable one, as we know from personal experience, and attention is called in the report to a process which, it is said, is likely to be more extensively used in the future, owing to the success which has attended its use up to the present.

Chemical works seem to be but small offenders in the way of pollution, the waste waters from the manufacture of ammonium sulphate being the only point referred to.

This is a matter which we think can be satisfactorily dealt with, and in a manner which enables the manufacturer to effect an economy by so doing.

There is one point which it is as well manufacturers should make note of, however, and that is, in nearly every instance when the effluents are of an objectionable nature, as far as the rivers are concerned, mention is made of the possible alternative of running the obnoxious effluents into the sewers. It will be remembered that under the Public Health Acts Amendment Act of 1890 the Manchester Corporation determined last January twelve months, to force manufacturers to refrain from putting objectionable refuse into the sewers in accordance with powers afforded by Part III. of this Act.

Manufacturers should bear this in mind, or possibly whilst intent upon steering clear of the dangers of Scylla they may wreck themselves upon Charybdis.

It is also questionable whether all parties will be willing to agree to the proposal to treat one and all alike, irrespective of their position in the watershed.

At any rate, now is the time for manufacturers desirous of laying any apparent grievances before the committee to do so; and moreover, to endeavour by amicably approaching the committee to learn what are the first steps to be taken towards "adopting the best practical methods for preventing pollution."

THE CARRIAGE OF PETROLEUM.

The question of the advisability of permitting the carriage of petroleum through the Suez Canal seems in a fair way to be decided in the affirmative. Viewed apart from any interested motive, there seems to be every reason why, if possible, the carriage of petroleum in bulk by this shorter route should be permitted. The chief objection, namely, the danger of fire or explosion is apparently satisfactorily dealt with by the regulations which the Suez Canal Company have signed. We are of the opinion that the claim for interference made by the North of England Steamship Owners' Association, on the plea of danger to the Mercantile Marine is discounted by the fact that the Underwriters' Association have not thought it necessary to interfere in the matter, a body whom it would have been imagined would have been amongst the first so to do, if there was any real cause for apprehension.

THE CHEMICAL SOCIETY.

THE second anniversary dinner of the Chemical Society was held on Wednesday evening at the Hotel Metropole, the president of the society, Professor Crum Brown, being in the chair. Among the gentlemen present were Sir Joseph Lister, the Treasurer of the Royal Institution (Sir J. Critchen Brown), Professor Odling, Professor Thorpe, Dr. Gilbert, Mr. Carteighe, Professor Reinold, Professor Tilden, Professor Ayrton, Dr. Hehner, Dr. Thorne, Mr. Thiselton Dyer, Dr. Stevenson, Professor Carey Foster, Professor Wyndham Dunstan, Professor Meldola, Professor Perry, Professor Marshall Ward, Mr. C. Tookey, and Mr. D. A. Louis. The president proposed "The Queen" and "The Prince and Princess of Wales and the rest of the Royal Family." These toasts were loyally drunk, and then Professor Odling proposed "Kindred Societies and Institutions," with which he coupled Professor Ayrton, the president of the Institute of Electrical Engineers. Twelve months ago, he said, it was their good fortune to be addressed in a speech of singular eloquence and interest, by Lord Salisbury. They then had also the pleasure of hearing the Attorney-General, Sir H. Roscoe, and Sir Lyon Playfair. He was sure there were none present who would contest the proposition that chemistry was the basis of all things—it was the tortoise on which reposed Atlas who sustained the world. He could not claim for chemistry the unique distinction so proudly claimed by an eminent mathematic quaternions that it could by no possibility be made useful. But sure that the utilitarian purposes of the science would be gove strictly scientific principles. No scientific body could be more i to chemistry than the electrical engineers, with which Professor was identified. Professor Ayrton responded. Sir Joseph Lis posed "Chemical Science." He said that the medical profess deeply indebted to chemistry. To that science the medical pr owed ether, chloroform, nitrous oxide. It was too dreadful to think medical science would be without anæsthesia—and it was to ch that the profession owed all the anæsthetics which were so inv to surgery. The whole science of bacteriology was based on ch —and in the sphere of infectious diseases how great a debt was the discoveries of M. Pasteur. Without the small smatte chemistry, which he had been happy enough to acquire, he never have been able to practice the antiseptic surgery which been able to carry out. He hoped that the standard of c knowledge which was required of candidates for the medic surgical profession would be greatly raised. With the toast h associate the name of the respected president of the society, P Crum Brown. The president, in response, said that the C Society had so progressed that it was able to make much more v contributions to practical questions relating to public hea sanitation than it had been in former days. Professor Thorpe p "The Visitors," with which he coupled the name of the Trea the Royal Institution, Sir J. Crichton Browne. The C Society was under special obligation to the Royal Institution had most courteously on many occasions shown their hospit placing the theatre of the institution at their disposal. Sir J. C Browne briefly responded.

SOAP PLANTS.

By J. R. Jackson.

(*Continued from page 181.*)

Vitis saponaria, Seem.—A climbing plant belonging to the order Ampelideæ, and found in Queensland as well as in t Islands, where, Seemann says, the natives use it for the same as the last. The stem, especially the thicker part, is cut int from a foot to eighteen inches long, heated on hot stones, an thus rendered quite soft, it produces in water a rich lather, equal to that of soap.

Gymnocladus chinensis, Baill.—This leguminous tree is a n China, as its specific name indicates. It is thus described in and Hemsley's "Index Floræ Sinensis": "This is the soap t Fei-tsao-tou, or fat black bean of the Chinese, used by women i ing their head and hair." The pods, which are about 3 inche 1½ inch wide, and 1 inch thick, are beaten with a mallet, an in water for about two days. They are sold in the market at of about sixteen to twenty a penny. Bernardin says that the the branches of the allied species *G. canadensis*, L., is used in as soap.

Gleditschias sinenis, Lam.—This is also a Chinese leguminou the pod of which, when dry, is quite black, about 10 inches lo inch wide, and very thin. It is used by the Chinese as soap, a to restore animation in partially-drowned persons.

Entada scandens, Bth.—A large, woody, leguminous climbe in the tropics generally. The spirally-twisted stems are soft, and spongy, and would appear to contain saponaceous matter, ladies of Manila use them, under the name of "Gogo," for the hair. The kernals of the seeds are used in Nepaul for t purpose, and in Bengal the hard seeds are employed by washe crimping linen.

Tetrapleura Thonningii, Bth.—A large, leguminous tree Tropical Africa. The pods, which are from 6 to 10 inches l about 1½ inch broad, are rounded at the apex, and each valv stiff longitudinal, often wavy, wing running down its middle f to end. They are of a shiny-brown colour when dry. These pods contain a saponaceous principle, and are sold in the Sier markets for washing purposes. They are also occasionally i into this country. The plant is known as the "Ogagouma" in

Acacia Concinna, D. C.—A climbing leguminous plant, n the eastern Himalayas, western and eastern peninsulas of India, Maylay Islands, and China. The pods vary in length from inches, are about ¼ inch wide and ¼ inch thick. They are co between the seeds and when dry, are of a brown colour and shrivelled appearance. A considerable trade is carried on with some parts of India, as they are much used for washing, espec the head.

Bernardin says that the pods of *Acacia latronum*, Willd. Indian tree, are used for the same purposes.

ızia Lophantha, Benth.—A tall shrub or small tree of West lia, is described as containing 10 per cent. of saponin in the oots; while A. Lebbek, Bth., a tall tree, widely distributed h India, Burma, Ceylon, Malay Islands, China, North Australia pical Africa, is said by Bernardin to contain a saponaceous le in its leaves, in consequence of which they are used in India abia for washing purposes.

erolobium Timbouva, Lam.—E. Cyclocarpum, Griseb.—A lofty nous tree of Jamaica and Venezuela. The pod is nearly circular, lk being apparently situated in the centre of the circle, and the ns of the seeds are marked by regular depressions. These pods own under the name of "Orejera," and are used for washing in Grenada.

llaia Saponaria, Mol.—A tree some 50 to 60 feet high, native of ilian forests, and belonging to the natural order Rosaceæ. The s known as the "quillai" or "cullay" tree, and the bark as a, or soap bark. It is rough and dark coloured externally, while ner bark is a whitish grey colour. It is very rich in saponin, and also to contain a large quantity of carbonate of lime and other tl matter. It is commonly used in Chili for washing clothes, and nce for washing silks, as it is said to remove dirt and grease and art a lustre without injuring the colour. It may also be used for ing hair brushes and for similar purposes, under conditions in soap and other alkalies are powerless. Besides this, the pulver- ark makes an excellent hair wash, and is said to be largely used nch hairdressers. By placing some of the powder in water and g it, it readily produces a froth, and in consequence of this, it is have been used to give a fictitious head to stale beer. *Quillaia iana*, a Brazilian species, is described as having similar properties.

pecies of Begonia, known in Egypt as the "Achaloax," furnishes , a decoction of which, according to Bernardin, is used in sheep g.

leaves of the well-known papaw (*Carica papaya*, L.) also con- aponin, and are used by the natives in tropical countries for g clothes.

quinia Armillaris, Jacq.—A low, rigid tree belonging to the l order Myrsineæ, and found in the West Indies, Brazil and a; has saponaceous leaves, which are sometimes used as a sub- for soap.

cunia saponacea, Welwitsch, known in Angola as "mutonga- "—The roots are said to be saponaceous. The genus is now d to Phytolacca.

ongst monocotyledonous plants there are several that have aceous properties. Thus, in the order Scitamineæ, the fruit of lia pinguin, L., is reported as having been found useful as a soap ute. A kind of vegetable soap is stated to have been prepared aica some years ago from the leaves of the American aloe (Agave ana, L.), which was found as detergent as Castile soap for g linen, and had the superior quality of mixing and forming a with salt water as well as fresh. In Peru the leaves of this are used by first wetting the clothes, and then beating them with of the agave which has been crushed; a thick white froth is pro- , and after rinsing the clothes are quite clean.

orogalum Pomeridianum.—A liliaceous plant of California, g a large oblong bulb covered with coarse brown fibre. It is in California as the "Amole." The bulbous root rubbed in makes a thick lather, and is said to have a similar smell to soap. It was very much used by the North American Indians the American possession of the country, and at the present time so much in demand for washing clothes, by merely removing the husk and rubbing the bulb over the fabric in the same way as

ca filamentosa, L., and several other species of Yucca, natives rolina and Virginia, are described as yielding a saponaceous from their roots.

m the foregoing list of plants it will be seen how varied are the s in their botanical affinity, so that the saponaceous principle, h characteristic in some natural families, is very widely diffused.

Parliamentary Jottings.

SMOKE NUISANCE (METROPOLIS) BILL.

he House of Lords last week, on the motion to go into Committee n this Bill,

ount Midleton said he had been offered a committee to inquire he question of the smoke nuisance, but to this course there was vious objection that a committee had been appointed four years consider a kindred subject, and that the present Bill was the ne of their deliberations. Another objection was that since the ittee sat the whole subject had been, and, as he thought unwisely, delegated to the London County Council. His experience of the London County Council in the past, and he was afraid it would be very much the same in the future, was that it was very much engaged in unprofitable discussions of many questions which the Legislature had not intrusted to them, and that it entirely neglected subjects with which the Legislature had empowered it to deal. Although the London County Council was well represented in their lordships' House, not one of their lordships had risen to say that the London County Council proposed to take any action in the matter. He objected to the Bill because since the committee had sat further light had been thrown by science upon many points discussed before that committee. Although he was not perfectly satisfied that the machinery provided by the Bill would work smoothly, he felt that, as he had no better plan to propose, half a loaf was better than no bread, and he would therefore support the measure in the hope that it might shame the London County Council into taking some steps in the matter.

Lord Stratheden and Campbell wished to deprecate any obstruction to the measure. The London Public Health Act, 1891, gave the Bill a more practical foundation than it would otherwise possess, because that Act deputed vestries as the agency for sanitary purposes, and also designated the Local Government Board as the machinery in the same way as the Bill before the House did. There was sufficient evidence before their lordships to show that domestic and industrial smoke must be abated in order that London might have the same amount of daylight which other capitals enjoyed.

The Marquis of Salisbury said he did not oppose the motion to go into Committee, although he had little faith in the remedy proposed by the Bill. What the fate of the Bill would be in Committee he did not venture to predict.

The House then went into Committee on the Bill.

Upon Clause 4, which empowers sanitary authorities to make bye-laws for regulating the emission of black smoke from buildings.

Lord Herschell said that the Standing Committee had given two days' consideration to a similar Bill, and then, after they had got it into shape, the noble lord had abandoned it. That was not a great encouragement to the Standing Committee to go through the Bill again.

Lord Stratheden and Campbell said that the Standing Committee had entirely reversed the decision which their lordships had arrived at on the second reading of the Bill. The question now before their lordships was whether Clause 4, which was of the very essence of the Bill, should be adopted, and he would press their lordships to agree to it.

Clause 4 was then agreed to.

Clauses 5, 6, and 7 were also agreed to.

On Clause 8 (power of London County Council to make bye-laws as to fireplaces, etc., in new buildings),

Viscount Cross thought that this clause conferred enormous power on the London County Council. He hoped that the noble lord would be content to omit the clause at the present stage of the Bill, and bring it up in the Standing Committee. He moved the rejection of the clause.

The Duke of Westminster said that the object of inserting the clause was to stimulate invention. Inventions in the matter of fire-grates were being made every day, with the object of providing some means by which the smoke in domestic fireplaces should be consumed; and, therefore, he hoped that the clause might be allowed to stand.

The Marquis of Salisbury drew a picture of families, unable to dine at home in consequence of their being driven out of their houses by chimneysmoke, meeting in the street, and some such dialogue as this taking place in explanation for their appearance:—"Oh, the London County Council is stimulating the invention of Mr. A. in my house." "In my house, on the other hand, they are stimulating the invention of Mr. B." (Laughter.) Looking to the strong sympathy with intellectual experiments which the London County Council had shown, he thought that householders might be placed in a very disagreeable and terrible position owing to the variety of firegrates in different parts of London and the experiments they would have to submit to. He thought that the clause should be struck out now, and that the Standing Committee should be at liberty to consider the question.

The Earl of Kimberley said that one of the objects of the clause was to stop the pouring of black smoke into the London atmosphere by large clubs and hotels.

Lord Stratheden and Campbell did not consider the clause essential to the Bill.

The clause was struck out, and the Bill was reported to the House, being afterwards referred to the Standing Committee.

TECHNICAL AND INDUSTRIAL INSTITUTIONS BILL.

Lord Macnaghten, in moving the second reading of this Bill, explained that its object was to facilitate the aquisition of sites for institutions which were now commonly known as polytechnics. In illustration of the necessity for the Bill, he showed that a member of their lordships' House had offered one acre and a quarter of land in Clerkenwell for the City Poletechnic, for which the—Charity—Commissioners

had already settled a scheme but that it had been found impossible to carry out the intentions of the donor, either under the powers of the settlement under which the land was held or under any existing Act of Parliament.

Lord Thring said there was no limit whatever upon the powers given by the Bill with respect to commons, and, while he admitted that the Bill was framed with the best of intentions, he did not think the objects aimed at necessitated the exercise of such unlimited powers.

The Earl of Kimberley said that the Bill incorporated the Lands Clauses Consolidation Act, but he saw that by the Act of 1854 the rights of the remainder man was absolutely guarded. He wished to know whether that would be so under this Bill.

Lord Macnaghten said that this Bill went beyond the Act of 1854, and it had become more and more common to consider tenants for life as owners. The clause to which so much exception was taken was to be found in the Act of 1854, but it was by no means necessary to this Bill, and he should be glad to omit it.

The Earl of Kimberley said that no one could be more desirous than he was to relax the fetters which entail placed upon life owners and, where it was necessary, there should be full powers to part with land for a consideration. But it was a different thing to confer upon an owner for life, power to give away a large portion of land without consideration, because he would be giving away property which was not his own. It was right that the interests of the remainder man should be guarded, because four acres in a town might be of enormous value; and, if the tenant for life were on bad terms with the remainder man, he might practically deprive him of his whole estate. There might be such a clause in the Act of 1854, but since then there had been a great change in public feeling with regard to commons, and the clause might operate most injuriously.

Lord Macnaghten said he sympathised with what had been said by the noble earl, and admitted that it would be necessary to guard against the powers of the clause being abused.

The Bill was then read a second time.

Legal Intelligence.

MANCHESTER ASSIZES.

CROWN COURT.

(Before Mr. Justice Collins and a Special Jury.)

MOULTON V. HEATON.

The plaintiffs in this case were Messrs. Moulton & Co., soap manufacturers, of Macclesfield, and the defendant was Mr. Henry Heaton, of the Springfield Soapworks, Bradford, Yorkshire. Mr. Bigham, Q.C., and Mr. Bather were for the plaintiffs; Mr. Shee, Q.C., and Mr. Walton represented the defendant. Mr. Bigham said that in 1889 the plaintiffs discovered a secret process of making paraffin soap in such a way as to remove from it the offensive qualities it had previously had. Paraffin had been used in the making of soap for a considerable time before the plaintiffs discovered their secret process. Such soap was largely used for laundry purposes, but unfortunately the smell clung to the linen. This crippled the sale of the soap. When Mr. Moulton made his discovery he produced a trade mark, and this he registered in October, 1889. He called the soap "musk paraffin" soap, the word "musk" indicating the scent which had taken the place of the paraffin. Mr. Moulton's firm spent a considerable sum of money in advertising the soap, and it obtained a great sale all over the country. A host of imitators sprung up, and this action was to put an end to the loss which was sustained in that way. The trade mark of the plaintiff was a musk plant in a flowerpot, standing on a paraffin barrel. The words "musk paraffin" were used with the picture. The defendant used a trade mark of a vase in whichthere was a musk plant of much larger dimensions than that of the plaintiffs. He also used the words "musk paraffin" with the trade mark. The plaintiff claimed no exclusive right in those words.

The defendant, Mr. Henry Heaton, said his trade was exclusively in the West Riding of Yorkshire. He had been for forty years in the trade, and he began the manufacture of paraffin dry soap in 1888. Unfortunately the soap left an unpleasant smell when clothes were washed. He tried to operate with various scents in order to remove the smell, and among the scents he had used was musk. Musk was a scent which had been used in the manufacture of soap for many years. He first made the "musk paraffin" soap in the early part of 1890. A special label was prepared, in which the name "Heaton" was the most prominent feature. When the label was adopted he had not heard of the existence of Messrs. Moulton.

The jury returned a verdict for the defendant, holding that the trade mark of the defendant was neither intended nor calculated to deceive.

NISI PRIUS COURT.

(Before Lord Chief Justice Coleridge and a Special Jury.)

THOMPSON BROS. AND CO. *v.* SHARP, MURRAY AND CO.

The plaintiffs were yarn merchants in Glasgow, and the defendants were dyers at Bradford.—Mr. Gully, Q.C., M.P., and Mr. Sutton appeared for the plaintiffs, and Mr. Bigham, Q.C., and Mr. Roberts for the defendants.—The plaintiffs claimed damages against the defendants for improperly dyeing a quantity of yarn. The plaintiffs' case was that in August, 1888, they asked the defendants to dye for them a sample of yarn with indigo blue. The sample was satisfactory, and in December, 1888, and January, 1889, yarn to the extent of 15,000 lb. was sent to the defendants to be dyed indigo blue. In July, 1889, a further quantity of yarn was sent to the defendants for the same purpose. When the yarn was returned to the plaintiffs they sold portions of it to their customers. The dye did not give satisfaction to the plaintiffs' customers. It was found, Mr. Gully said, that the indigo was adulterated with benzo-purpurine, and that the dye "bled" red when bleached. One customer, to whom 10,000 lb. of yarn was sent, declined to pay for it on the ground that it was not dyed with pure indigo blue. The plaintiffs brought an action to enforce payment, but lost their case. Other customers also repudiated their bargains, and the plaintiffs had suffered great loss through the fault, as they alleged, of the defendants. They claimed altogether £1,749.

Mr. John Isaac Tinkler said he had had experience in dyeing, and declared that he would consider it a fraud if a man sold material described as of an indigo blue shade, in which indigo had not been used. When he said indigo he meant indigo. In his opinion indigo was not used as a descriptive term like turkey in turkey red. He would expect indigo to be used in producing indigo blue, although in turkey red he would not look for the presence of turkey.—(Laughter.)

Mr. J. S. Hoyle, manager of the colour department in the establishment of Messrs. Hoyle and Sons, cotton spinners, Manchester, said that pure indigo blue dye ought to be guaranteed by the dyer for the price paid by the plaintiffs.—Mr. Christopher Rawson, analytical chemist, stated that the effect of the use of benzo-purpurine as the foundation of a dye would be that the colour would "bleed" under the influence of hot water. He held that the dye was not correctly described as indigo blue if other ingredients had been introduced into the colour.—Mr. James Lennie, manager of a firm of shawl manufacturers at Kilsyth, said that in the trade the term indigo blue was regarded as a sort of hall mark, guaranteeing that the colour was produced by indigo.—Several other witnesses gave similar evidence.

At the conclusion of the case for the plaintiff the jury were asked by the Judge whether they wished to hear the defendants' witnesses. The jury replied that in their opinion the plaintiff got what he wanted, and the Judge, remarking that that was a verdict for the defendants, gave judgment accordingly.

THE CARRIAGE OF PETROLEUM.

At the last monthly meeting of the Liverpool Chamber of Commerce, Mr. Charles McArthur, president, in the chair, the carriage of petroleum in bulk through the Suez Canal was brought up. In the proceedings of the general trade committee it was stated that the North of England Steamship Owners' Association recently called the attention of the chamber to the movement amongst shipowners in various parts of the United Kingdom against the proposal to admit, after the 1st of July next, the carriage of petroleum in bulk through the Suez Canal. The association expressed the hope that the chamber would assist the shipowners in their movement by writing to Lord Salisbury to ask for the active intervention of the British Government against the danger to the mercantile marine which is apprehended. The council of the chamber had invited an expression of opinion on the subject from the Liverpool Ship and Steamship Owners' Associations. The Steamship Owners' Association are of opinion, as the provisional regulations have been signed for the Suez Canal Company without any protest being made by any foreign Government, that it is too late to interfere. The Shipowners' Association, on the other hand, are in favour of a protest being made, as the regulations will not come into force until 1st July, whilst the Underwriters' Association do not as a body think it needful to express any opinion. In consequence of these different expressions of views the subject seemed likely to continue under the consideration of the council.

Mr. Bindloss moved the adoption of the proceedings of the committee. He said that with regard to the carriage of petroleum in bulk through the Suez Canal there seemed to be a great difference of opinion as to whether it would be such a danger as to call for the interference of this country. The underwriters seemed to be so thoroughly indifferent that the chamber could scarcely go further in the matter.

Mr. Worthington seconded, and the resolution was carried.

RAILWAY RATES AND CHARGES.

oint Committee of Lords and Commons appointed to consider various Bills for confirming the provisional orders made by the Trade in regard to railway rates and charges met again last e Duke of Richmond and Gordon in the chair, and proceeded the North-Eastern Railway Company's provisional order. erable discussion took place with reference to clause 2, as to ision of wagons by the company for the carriage of certain f material. Mr. Whitehead, for the Mansion-house Asso- which represents the principal commercial bodies in the counties, pressed for certain amendments, with the result that on, for the company, submitted the following new clause, r. Whitehead declared to be satisfactory to his clients, and s, therefore, inserted in the Bill :—

maximum rate for conveyance is the *maximum* rate which any may charge for the conveyance of merchandise by mer- train, and includes the provision of locomotive power and the company, and every other expense incidental to such con- otherwise herein provided for; provided that the company be required to provide trucks for the conveyance of lime in lt in bulk or any of the following articles when carried in nner as to injure the trucks of the company—that is to say, cal liquor, creosote, coal-tar, gas-tar, gas-water, or gravel paving; provided also that, where for the conveyance of any lise the company do not provide trucks, the rate authorized eyance shall be reduced by a sum which shall, in case of between the company and the person liable to pay the e determined by an arbitrator appointed by the Board of

SOCIETY OF CHEMICAL INDUSTRY.

SCOTTISH SECTION.

nnual general meeting of this section took place in Glasgow, il 5th, the chairman, Mr. E. C. C. Stanford, presiding. Dr. n, Hon. Secretary, presented his annual statement, which but satisfactory, and showing the roll of membership well d. The suggestions of the committee as to changes in the list bearers were endorsed by the meeting and carried, and ly the chairmanship for the year 1892-93 devolves upon Mr. wsitt, of the Atlas Chemical Works, Glasgow. Mr. Fawsitt eeded with his promised paper on "the dry heat" vulcaniza- bber, with special reference to the use of an improved vul- Processes hitherto in vogue were four in number, viz. : the steam, vapour, and dry heat, the last being most in favour, possessing drawbacks like all the rest. Mr. Fawsitt confined iefly to the waterproofing of fabrics by indiarubber, and to reading he had present numerous samples of stuffs finished ished. Fully successful waterproofing is extremely difficult nent, if it may be said to have been attained, for in the process all sorts of mischief may arise. The vulcanized may turn out an exceilent job, while at the same fibre of the cloth (cotton, woollen, or silk) will destroyed by the excessive temperature employed, and ther causes which are still matters of mystery to the operating After an apparently successful finish, the proofed goods are many decomposing influences, particularly to the action of if not well fortified in the making will succumb. The co- f different dyes and pigments with rubber proofing in its odes is little understood as yet, and Mr. Fawsitt thinks that satisfactory results the operations of the dyer and the proofer brought more into partnership, instead of standing quite at present. In vulcanising indiarubber, he follows the "dry tem, but employs a new agent in the vulcanising itself—viz., lide of antimony. Iodide of tin or iodide of lead may do as as, in his experiments, he began with antimony, he has it, chiefly in order not to complicate matters for the practical ring proofers who might take the improved process up. In of cost, the new agent was certainly handicapped ; but the been reduced, and he claimed that the results of durability, he manufactured goods warranted the extra outlay ; and, e actual "curing" was performed in much less time. The ferred that experiments with the new vulcanizer were still s, and that greater economy combined with increased might reasonably be looked forward to. The paper ned to with evident interest and relish, but no dis- worth mentioning followed, for the reason, evidently, subject was not sufficiently familiar to any other chemist Mr. J. W. Biggart, Greenock, then read a note on the com- f Hunyadi Janos Mineral Water, with the aid of black-board e aim being to show the excellent and safe chemical combina- tion found therein. A conversation followed, in which the Chairman (Mr. Stanford) said that he used it at home, but preferred to make it himself. There was no natural mineral water which could not be produced artificially. Dr. Henderson thought the importation of natural waters in such quantities was a mistake, economically and otherwise. The chemical composition of natural waters must vary according to the season drawn, and they were intermittently liable to other changes in composition, but waters artificially produced could be had always the same, and this always free of accidental risk.

THE MERSEY AND IRWELL JOINT COMMITTEE.

SIR H. E. ROSCOE'S PRELIMINARY REPORT.

A meeting of the Mersey and Irwell Joint Committee was held last Monday in the rooms of the Manchester Chamber of Commerce, the Right Hon. J. T. Hibbert presiding.

The Clerk (Mr. F. C. Hulton) submitted a preliminary report in the following terms by Sir H. E. Roscoe, M.P. :—

I may commence this preliminary report by stating my opinion that of the two sources of pollution, viz. : sewage and manufacturing refuse, the first is by far the most serious. With the sewage, however, I am not at present concerned. As regards the second, upon which I have to report, I may remark that the practical question is not whether the waters of our Lancashire rivers can ever be made fit for domestic use, but by what means they can be rendered inoffensive. I am also of opinion, as expressed in my letter to your Clerk of November 23rd, 1891, that the application of uniform standards of purity, so far as manufacturing processes are concerned, to rivers throughout the watershed is inexpedient, but that in every case the best practicable means for preventing pollution must be adopted. The first necessity is that all solid matter must be excluded from the stream, according to clause two of the draft of the Mersey and Irwell Joint Committee Act, 1892, and in my opinion this can be effectively done without interfering materially with manufacturing interests. The question of liquid pollution is a more difficult one, and requires special inquiry into the nature and amount of the various effluents, and the present report mainly refers to this part of the subject. On commencing the inquiry I was furnished with a report issued by the Rivers Committee of the Manchester Corporation, dated September, 1891. This report contains a list of 296 works on the banks of the river Irwell and its tributaries. From this list I selected a certain number of works to be visited as representing the various trades on the bank of the river. Together with these I added several works situated in the Mersey watershed. In all forty-one works, carefully selected as typical, have been visited and inspected, and thus evidence obtained to enable me to advise the Committee as to the best steps to be taken to prevent pollution. The works inspected are classed under the following heads :—1. Calico printing and dye (15 works visited). 2. Bleach (six works visited). 3. Wool scouring, fulling, and felting (four works visited). 4. Paper-making (five works visited). 5. Tanneries (two works visited). 7. Silk dyeing (four works visited). 8. Chemical works (four works visited).

1. Calico Printing and Dye Works.—With regard to both these trades it is well to remark that since the introduction of artificial colouring matters, and of wood extracts instead of madder root and of wood itself, the pollution arising from these works is very much less now than formerly, although even at present a considerable amount of pollution does exist. This pollution, however, is mainly confined to a portion of the total amount of water employed. The volume of effluent is very large, and serious pollution must continue so long as all the wash waters are allowed to mix with the waste liquids from the various processes. The treatment of so large a volume is a serious question, but much less so if the manufacturer were advised to separate the "wash waters" (which might without serious damage be returned to the stream, as they contain no solids, and are only, as a rule, slightly coloured) from the more concentrated and impure waters which require treatment. The manufacturer would then have only thoroughly to cleanse a portion of the total amount of effluent. The process of purification to be adopted must obviously depend, as the Royal Commissioners reported in 1870, upon the position of the manufacturer on the stream, the space at his disposal, and other circumstances. Efficient methods for purification of the foul effluent are well-known, and how this is to be accomplished, whether by means of subsidence (with or without the addition of chemical agents) or by filtration, is a question which each manufacturer must settle for himself. In cases where land is not available, either for filtration or even subsidence, the desirability of allowing the manufacturer to pass his fouler effluent, or a portion of it, direct into the sewer must be considered. I may state that the effluent from this class of works would not have any injurious effect on the sewers provided that solid matter and sludge are excluded.

2. With regard to the effluent from bleachworks, the pollution is not of a serious character. It consists essentially of a solution of chloride of calcium, containing in some cases traces of free chlorine, which may be thrown into a river in considerable quantities without rendering the water offensive; on the other hand, the entrance into the stream of the lime sludge derived from the manufacture of bleaching liquor from bleaching powder must be strictly prohibited.

3. In the case of wool scouring, fulling, and felting works the pollution is serious. The effluent contains alkali, soapy and oily matters, fullers' earth, and blue colouring. The oils, which are derived not only from the soap used in the process of manufacture, but also from the natural oil exising in the wool, are combined with a portion of the alkali. At one of the works included in this class, a method of purification has been adopted which I have personally inspected and which I found to be perfectly efficacious. This is done by chemical precipitation and subsequent filtration. The cost is inconsiderable, and is rendered less by the fact that much of the refuse oils and fats can be regained. I have no hesitation, therefore, in advising that all works of this class should be compelled to adopt similar means for the purification of their effluents: indeed, it is satisfactory to learn that, the attention of other wool scourers having been called to the character of this process, the adoption of the plan is likely to become general.

4. Paper-making is a very large trade on the streams, and is the cause of a serious amount of pollution. Great progress in utilising the waste material has, however, been made during the last few years, and several paper manufacturers on the stream already do all that is practicable in this respect. Others, however, are less careful, and measures must be taken to insist upon these taking like precautions. These precautions are (1) in preventing the dirt from rag washing, lime, fibrous matter, etc., from passing into the stream (this is accomplished by subsidence); (2) in the evaporation of the soda liquors derived from the boiling of the esparto, straw, etc., this latter process being remunerative. The large volume of water used in the manufacture for washing purposes may, without damage, be admitted direct into the river, provided means be taken to prevent the passage of waste fibrous material.

5. Tanning.—The direct entrance into the streams of all liquids, as well as solids, from tanyards must be strictly prohibited, as the effluents are of a very offensive and prutescible character. They possess, however, manurial value, and where sewers exist these liquids may with propriety be sent down them, especially as their volume is not large. In cases where sewers do not exist, a special treatment must be adopted. No attempt has yet been made by any tanner on the streams to purify his effluent.

6. Fellmongers. In this trade the waste products are very offensive. At present the whole of the foul liquors go direct into the streams, polluting the water for a considerable distance. Where sewers exist the liquids, after subsidence, might be then got rid of. In other cases some method of purification, such as is used in the case of sewage, must be adopted. In one works preparations for such a treatment have been made, but not yet put into operation. It is very advisable that this should be done at once.

7. Silk dyeing.—Formerly, the waste products from this trade polluted the river conisderably, but, at present, there is little more to complain of than the admission of coloured water. The worst of this should be separated and filtered, as in the case of calico printing and dyeing works.

8. Chemical Works.—In the case of chemical works, the variety of materials used and of the products made is so great that it is impossible to report upon these as a class. In each case special examination must be made, and care taken that the best practical means to prevent pollution is adopted. Several works were visited, but no serious pollution was observed, except in the case of tar works, in which sulphate of ammonia is manufactured. In this process lime sludge is run into the river. This must be stopped by putting down depositing tanks for subsidence and cooling. By this means the larger portion of the tarry matter, which at present enters the stream, would also be arrested. This plan is in operation in one works.

In conclusion I may add that my invesigation has shown that very much may be done to improve the condition of the streams by careful inspection and friendly communication with the manufacturers, who have met me in a conciliatory spirit, and this without interfering with the important trades of the district or harassing the manufacturers in carrying out their processes.

Dr. Hewitt said that although the report was only intended to be a preliminary one, he thought it laid down the principles on which the whole case would be settled, and after a very long experience as a manufacturer and with a knowledge of the kind of works referred to in the report, he could say that Sir Henry Roscoe did not advocate anything that could not be done by any manufacturer at very small cost. He himself was settling very much larger quantities of material, partly solid and partly liquid, than any of the trades mentioned in the report, and yet the expense was comparatively slight. The effluent was comparatively free from solid matter. There was no difficulty in separating solid from liquid matter, and he thought there need be little in diminishing the quantity of colouring matter that went into the river. It simply meant that every manufacturer must use a little more care and a little more expense, and when that was done by everybody there was no injustice done. Before 1863, as they might be aware, the chemical works throughout the country used to pollute the atmosphere to an enormous extent, and an Act was passed for the purpose of preventing chemical manufacturers from sending noxious vapours into the air. Now, he believed there was no chemical manufacturer who would not tell them that the passing of that Act had resulted in very large profits to the manufacturers. He was not going to say for a moment that the prevention of the pollution of the rivers would be followed by the same amount of benefit to the manufacturer, but he was certain of this, that every manufacturer could do something to avoid injury to his neighbour, and that it was his duty to do it. If he had only the satisfaction of knowing that he was doing what was right, that ought to be sufficient reward. He was glad that Sir Henry Roscoe had been able to show that an immense amount could be done in this matter by nearly all the important trades in the watershed without injury to the manufacturers.

The Chairman said manufacturers here sometimes said that nothing should be done to injure them in their competition with foreign countries. As to that he might say that he had discovered that in Russia, where there were a considerable number of manufactories for calico printing, &c., it was impossible to establish any works until it had been shown to the authorities how it was proposed to deal with the effluent water. The State thus prevented the pollution of the rivers. He mentioned this to show that manufacturers here were not placed at a disadvantage as compared with manufacturers in some other countries. He thought it might be well to obtain information from France, Germany, and other Continental countries as to how the matter was dealt with there.

In reply to an observation by Mr. W. G. Groves, the Chairman said that all manufacturers must be dealt with on the same footing, irrespective of their position in the watershed.

Mr. Brierley suggested that in making the proposed inquiries an effort should also be made to ascertain how the question of land was dealt with on the Continent—he meant the land manufacturers would need in order to prevent the pollution of the stream. In many instances manufacturers were in a difficulty on that score. Directly they began to make inquiries about land for such a purpose the price asked became quite exorbitant —(Hear, hear.) Something ought to be done to smooth the way for manufacturers who were willing to do what they could in the matter.—(Hear, hear.)

The Chairman said that no doubt the question of land was a very important one, and one in which they ought to give every assistance to the manufacturers, but it was so large a question that it could only be dealt with by legislation. With regard to other information, he thought they might fairly ask the Foreign Office to obtain it for them.

On the motion of Mr. J. B. Haslam, seconded by Mr. A. E. Reyner, it was agreed to ask the authorities of the Foreign Office to make the inquiries suggested by the Chairman.

The Clerk submitted a report with regard to the action of the various local authorities in relation to the treatment of their sewage, from which it appeared that the Corporation of Bury, Ashton, Macclesfield, Mossley, and Stalybridge, had done nothing in the matter.

The Chairman said that the notices given to these Corporations and to certain local boards under the authority of the last meeting would expire in two months, and it seemed to him a desirable thing, in the interests of a friendly arrangement, that the representatives of these local authorities should have an opportunity of meeting the Joint Committee before the expiration of the notices, if they should desire to do so. He suggested that they should send to these authorities an intimation of their willingness to receive such a deputation, and that on the expiration of the notice, in the event of no heed being paid to their request, they should take proceedings. He would begin by taking proceedings against the town of Bury, which set up an impossible excuse. They said that until the law was altered and the owner as well as the occupier made to pay rates they would do nothing with regard to their sewage. That was an impossible excuse that could not be listened to for a moment.—(Hear, hear.)

Mr. Killick thought that if they took a Lancashire town they should also take a Cheshire town. He would suggest Macclesfield. It had been said in the Town Council of Macclesfield that no one had made them move yet, and that it was doubtful whether the Joint Committee could make them move.

Mr. Alderman Joseph Thompson moved that the Corporations of Bury and Macclesfield be informed that at the expiration of two months from the date of the notice served upon them the Committee will take proceedings against them, but in the meantime they are willing to receive a deputation from each of the boroughs with a view to conferring as to the best means of dealing with their sewage. The

ne by, he said, for letting Bury set them at defiance. They
to do with the excuse Bury gave, however much they
pathise with them in that matter. Then, with regard to
, he was sorry to put pressure on a town which had a hard
life, but when the town turned all its refuse into the
set at defiance all who tried to get the stream purified, the
me when they must show that the law was stronger than
tion.
on was seconded by Mr. Killick and adopted.
derstood that in the event of the Committee being suc-
e test cases against the Bury and Macclesfield Corporations,
should be instituted against the other authorities

f Inspector (Mr. R. A. Tatton) submitted a report in which
given of the action or inaction of the various authorities in
ed with regard to sewage treatment. He suggested that
authorities of Chadderton and Castleton who had done
uld be served with notice.
o Mr. Groves, the Inspector said Moss Side had not done
perhaps no harm would come of serving a notice upon

rman said he did not think Moss Side should have a notice,
e considering some plan of dealing with their sewage. He
t the inspector's report showed that a great deal was being
authorities. In many instances power had been got to
ey for sewers and also for the purchase of sewage farms.
justified them in stirring up those who had done
Hear, hear.) It seemed unfair to expect that a great num-
authorites should go to considerable expense to deal with
e if they allowed other authorities to do nothing.—(Hear,

rman Thompson said that as a member of the Manchester
he did not like to have to put undue pressure on a neigh-
he same time he must point out that Manchester was spend-
deal of money, and hoped to have its works completed
ar from this date. Salford was also spending a great deal
nd Stretford also hoped to have its sewage works completed
ths hence, while Moss Side was doing absolutely nothing.
they had a scheme before them, but that was not enough.
would probably be that when the Ship Canal was com-
s Side would be pouring a mass of sewage in amongst the
nt sent in by the other authorities.
reed that notices should be served on the Chadderton and
uthorities as suggested by the inspector, but that notices
be served on the Moss Side Local Board.
ting afterwards terminated.

ECTROLYTIC SEPARATION OF METALS.

S. E. F. SMITH and D. E. Wallace have been making
ier researches to see if the metals arsenic, tungsten and
m, &c., can be separated from gold in the presence of
yanide. The temperature seems to have a great influence
rapidity with which the gold is thrown out of solution.
tities of alkaline cyanides retard the disposition of the gold,
crease in the strength of the current leads to the deposition
pots on the gold.
t evolving about 1·8 c.c. of OH gas per minute, acting for
about 14 hours, was found to be most suitable.
n Arsenic.—10 c.c. of a solution of gold chloride was added
of a solution of arsenic and 0·75 gramme of potassium
e whole being diluted to a volume of 150 c.c.
al weight of gold taken equalled 0·1240 grams, while that
eighed 0·1248 gram, and was free from arsenic. Further
s made show that this method gives results which are
accurate for ordinary analysis.
m Molybdenum.—There was no trouble in effecting this
Stronger currents can be used with advantage.
ur of the deposited gold from the arsenic separation was of
ow colour. In this instance it was a deep yellow, almost

t giving 2 c.c. HO gas per minute was used. 10 c.c. of
ide solution (equal to 0·1027 gram of gold) 0·1 gram of
m, as ammonium molybdate, the same quantities of KCN
were taken. The gold deposited weighed 0·1024 grams.
n Tungsten.—It was found in this separation that unless
acid was first dissolved in a definite volume of alkaline
nd then put into the gold solution the precipitation was
. Following this method however, and using a current of
2·4 c.c. OH gas per minute, the following result was
0·1277 gram of gold, 0·1200 gram of tungsten, with KCN
as before, the weight of gold deposited was 0·1285 gram.
The gold was of a dark yellow colour, the deposit being lustreless, having a tendency to be spongy.

It would thus appear that this method is reliable, making an alternative method of procedure from that already described by the authors and published in this journal.

Some further experiments have been made in the separation of various metals from osmium.

Gold from Osmium.—The osmium was applied as osmiomide. The gold deposited was adherent and bright. A current generating 2·4 c.c. electrolytic gas per minute was used. 0·1277 gram of gold as chloride, 0·150 gram of osmium, 0·75 gram KCN and 150 c.c. water were acted upon by the current for 12 hours. The gold deposited weighed 0.1278 gram.

Since the metals cadmium, mercury and silver may be deposited from their solutions as double cyanides, a series of experiments were made to see if the three foregoing metals could be separated from osmium by the electrolytic methods. The results obtained show that it can be done, and without any essential difference in the *modus operandi* adopted in the former cases.

Cadmium from Nickel.—It was observed that the presence of caustic alkali in the cyanide solution prevented the deposition of gold in the separation of gold from tungsten, and experiments were made which confirmed this observation. Silver, however, is unaffected. It does not affect cadmium either, and this being the case, an experiment was made to see if the addition of caustic alkali would overcome the difficulty experienced by Smith and Frankel in the separation of cadmium and nickel from a cyanide solution. The results obtained were perfectly satisfactory and makes this separation accurate and complete.

Gold from Tin.—An attempt to deposit gold from solution in ammonium sulphide, and also to separate gold from tin in ammonium sulphide solution did not give satisfactory results, both metals being present in the deposits.

Laboratory Notes.

By J. Arthur Wilson.

THE DETERMINATION OF IRON IN WATER.

On pages 83 and 87 of Davis's "River Irwell and its Tributaries," the method of determining iron in water is described. No doubt the prussiate method for the above purpose is excellent, but I venture to put forward a method which I consider to be superior in many respects, especially in detecting iron when the prussiate process fails. I claim nothing new for it, being, as it is, simply the Tatlock process of estimating iron in alum applied to water analysis.

The residue left from the determination of total solids is treated with 1 c.c. of pure HNO_3 (1·42 sp. gr.) and again evaporated to dryness. Treat the residue with pure hot distilled water (about 5 c.c.), and 1 c.c. of pure dilute H_2SO_4 (1 of H_2SO_4 + 3 of water). Transfer to a stoppered weighing tube, marked at 10 and 20 c.c. respectively, add water to the 10 c.c. mark. Then add 0·2 gramme of pure recrystallized ammonium sulphocyanide, and agitate. Now add ether to the 20 c.c. mark, and agitate again. The ethereal layer, containing the red ferric sulphocyanide, is matched by using a pure iron solution made by dissolving 1·724 grammes of ferrous ammonium sulphate and 10 c.c. of normal sulphuric acid up to a litre. The standard iron is made by diluting 25 c.c. of this strong solution up to 100 c.c. 1 c.c. of this then is equivalent to 0·00005 of iron. All vessels are cleaned by hot HCl (free from iron) before use, so as remove all traces of iron. For the evaporation I should recommend 250 c.c. of the water to be taken, and I prefer to use Bischof's evaporator, so as to exclude all dust.

NOTE ON THE ALKALIMETRIC DETERMINATION OF THE HARDNESS OF WATER.

The alkalimetric method of ascertaining the hardness of potable water, sewage, etc., is gradually but surely supplanting the old Clarke soap process.

There is one precaution necessary which I desire to place on record, namely, the necessity of making a blank experiment to determine the amount of alkali abstracted from the glass vessel used in boiling, especially when new flasks are used. Old flasks do not give up any alkali which can be detected by this process, although to be found by other processes. The following experiments speak for themselves :—

Exp. No. 1. 100 c.c. of distilled water (from a tin-worm still), 2 drops of lacmoid, boiled in an old 4 oz. flask, and titrated by $\frac{N}{50}$ sulphuric acid. c.c. H_2SO_4 required = 0·1.

Exp. No. 2. 100 c.c. distilled water, 2 drops lacmoid, boiled in a new 4 oz. flask (thoroughly clean), and titrated as before by $\frac{N}{50}$ sulphuric acid. c.c. H_2SO_4 required = 0·3.

Exp. No. 3. 100 c.c. under above conditions, but another new flask, required 0·5 c.c. of $\frac{N}{50}$ sulphuric acid.

Correspondence.

*** We do not hold ourselves responsible for the opinions expressed by our correspondents.*

ANSWERS TO CORRESPONDENTS.

B. H.—Your request has been complied with.

P. and S.—Thanks for your letter. The latter of the two was a printer's error.

J. H. and Co.—Thanks for information, the matter has received our attention as you will see.

C. D.—We have much pleasure in doing so and hope your efforts will be attended with success.

I. M.—They will be sent you by post in uture.

S. C. Co.—We trust you succeeded in gaining the information you sought.

PURIFICATION OF SEWAGE.

To the Editor of the Chemical Trade Journal.

Sir,—In these days of perplexity how to deal with our sewage, I am sure the enclosed plan will be a welcome addition to our stock of knowledge, besides releasing chemists and others from any further attempts to solve the problem :—

"With your kind permission, and in deference to the expressed wish of a number of my fellow-townsmen, I will give an idea of what, in my opinion, is the best and least expensive method of dealing with this subject. The filter I would recommend is a cast-iron one made in cylindrical form, and fitted up in the same manner, and with the same materials as the gravitation sand filter mentioned in history, with a few modern appliances such as a water gauge arrangement, four surface mud cocks, and a complete system of self-cleansing. I propose that this filter shall receive its supply from a conical tank, with, say, a capacity of 25 000 gallons, the aggregate weight of which would be 250,000 pounds; the sewer to be 12 inches, the cone point 12 inches, the conduit pipe 12 inches, that is to communicate the sewage through the cone point to the filter, and, say, a cast-iron filter 24 inches. We get a filtering power of upwards of 400 pounds upon the square inch, which, of course, will diminish in exact proportion as the weight of sewage diminishes in the tank. This contrivance when set in motion will require little attention, say one man for a short time every morning and, say, an hour at the week end removing the sludge. This invention is based on natural laws, and admits of any amount of enlargement."

This proposal so closely approaches finality, I commend it to all sanitary authorities for its simplicity of detail, but above all for its strict adherence to physical laws—its deviser has evidently made hydraulics a special study. My object in sending it to you is to make its merits more widely known—it seems a pity it should waste its sweetness on the desert air of an obscure local print.

Yours respectfully,

Gransmoor, Fairfield. PETER HART.

Trade Notes.

To Chemical Manufacturers.—A general desire has been expressed by the chemical trade of the Manchester district, to give a complimentary dinner, and make a presentation to Mr. I. Levinstein for the very great service he has rendered to the chemical manufacturers and other allied industries of this country, in connection with the proceedings instituted against him at the last Manchester Assizes, which case was reported in full in these columns last week. Gentlemen approving of the suggestion and wishful to be present are requested to kindly send their names to the undersigned. Harry Grimshaw, Clayton and Charles Dreyfus Clayton. An early opportunity will be taken to call the subscribers together to form a committee.

Fire at Chemical Works.—The acid house of Tucker and Leavitt's chemical works at Flushing, Long Island, U.S.A., was destroyed by fire recently.

Discovery of a Coal Seam.—A new seam of coal was found at Ously, Cumberland, on March 18th, and which gives considerable promise. Boring operations have been going on for some time in the district.

Tender for Gasholder.—Messrs. Newton, Chambers and Co., Thorncliffe Ironworks, Sheffield, have obtained the contract for the supply of a new gasholder to the Corporation of Inverness. The amount of their tender was £6,180.

Explosion at a Petroleum Refinery.—A disastrous explosion occurred in a petroleum refinery at Aubervilliers, near Paris, last week. The oil on the premises caught fire, and 10,000 litres (2,200 gallons) in a tank were burned. A fireman was seriously injured.

Transferring Business.—We note that the analytical and consulting practice of Mr. Hugh Hughes, of Liverpool, has passed into the hands of Mr. Ernest Scott, who for some years has been connected as chemist with Messrs. Lever Bros., of Port Sunlight.

Ormskirk Gas.—A Select Committee of the House of Commons had under consideration recently a bill in which the Ormskirk Gas Company seek power to raise additional capital and extend the supply to the districts of Lydiate, Maghull, and Melling. The petitions of the Lancashire County Council and of the Ormskirk Local Board had been withdrawn, and the only opponent was Mr. Idle, a shareholder. After hearing him, the Committee passed the bill.

Explosion of Nitro-Glycerine.—A terrible explosion took place at the powder works at Pinole, California, last week, which destroyed the nitro-glycerine mixing house and shattered all the buildings. Four thousand five hundred pounds of nitro-glycerine were destroyed. The shock of the explosion was felt for 50 miles. Fortunately, four men who were at work were warned in time, and managed to escape. The cause of the explosion was overheating of the machinery.

Glass Blowing Extraordinary.—A window glass company of Celina, U.S.A., claims to have in their employ a blower who blows the largest glass cylinder blown by any glass blower in the United States. It measures 54 by 8 inches, taking a ball of glass weighing 60 pounds to produce. He makes on an average £80. a month. His gatherer makes on an average £40., and his apprentice, or "scrapper," about £18. In the old country the same blower and assistants would average respectively £19., £10., and £6.

Gum Stasny.—This gum, which is so called after the name of the Austrian firm who introduced it. It is said to be used for coating the interior of petroleum barrels, its special advantages being that it sinks thoroughly into the pores of the staves of the casks. It does not crack on drying or go lumpy, moreover the casks may be filled before the drying of the gum is fully completed, is also a point in its favour, that it is about 40 per cent. cheaper than the composition at present used. The effect of prolonged exposure to cold has not yet been ascertained.

The Analysis of Food in Argentina.—The civil governor of the city of Buenos Ayres has issued a notice to merchants, shopkeepers and the public generally that the chemical analysis of every alimentary substance imported, manufactured or sold for consumption is obligatory and that the case, cask, bottle or wrapper, etc., containing the same must bear the seal of the chemical office. Merchants are prohibited from printing on their labels the certificate of the chemical office, the only authorised form of certificate being the seal obtained from the office itself.

Cement as a Foundation for Engines.—Where sandstone is used as a foundation for engines, the saturation of the stone with drippings of oil must be carefully guarded against. The sandstone is so softened by the oil that it readily crumbles away and rapidly undergoes disintegration; the engines mounted upon such foundations gradually lose their proper position and a loss of power, besides injury to special parts is the result. The injurious effects of the oil drippings on sandstone is best seen when the engine is removed from its foundation, especially under plates, where the oil has gradually collected. At such spots loose, softened grains and pieces of sandstone are always found. Well-ground cement is incomparably more permanent than sandstone.

SUPERSULPHATE OF SODIUM.

Messrs. Julius Hulsen & Co., of Newcastle, agents for the Blaydon Manure and Alkali Co. Limited, have recently introduced this compound to the notice of bleachers, dyers, mineral water manufacturers, &c. The compound is in a crystalline state and is virtually solidified sulphuric acid, containing from 72 to 75% of acid sp. gr. 1·834, being soluble in its own weight of cold water. It is especially recommended for generating carbon dioxide and similar gases for electrical batteries, and the industries already mentioned. It is packed in iron drums and there is no danger in handling it.

The price in five ton lots is £10 varying in price according to quantity as low as 12s. 6d. per cwt. The following are the directions which are given in the utilization of this solid sulphuric acid prepared under Brindley's patents :—To reduce sp. gr. of the acid to 1·170, as required for electrical batteries, 1½lbs. of water to every lb. of supersulphate of soda must be added.

To remove the supersulphate of soda easily from iron drums, the drums should be battered first with a heavy wooden mallet, and then cut down the seams with a strong knife and hammer. The contents should be put into a lead-lined or earthenware vessel containing the requisite amount of water.

In the manufacture of mineral waters this article should be most useful as it can be stored with ease and safety, and does not require any of the special precautions which the storage of vitriol entails. The conditions of sale and freight, whether free on rails at the works at Hebburn-on-Tyne, or free on board at Tyne, can be obtained from the Company's agents at Newcastle, while orders for India, South America, and Mexico, must be made through Messrs. Leisler, Brock and Co., Glasgow.

Market Reports.

SCELLANEOUS CHEMICAL MARKET.

and for bleaching powder continues good, and makers are ed with orders, both for prompt and forward deliveries. ins still at £7. 10s. nett f.o.r. makers' works, and £7. 15s. .b. Liverpool and Tyne. In alkalis trade is rather quieter t, but there is no alteration in prices, which are for caustic f.o.b. Tyne, £11. 10s.; 74% f.o.b. Liverpool, £11. 10s.; 10s.; 60%, £9. 7s. 6d.; cream, 60%, £9. 2s. 6d.; soda for ordinary grades of Leblanc make, and 1 5/16d. for ark., 58%. Soda crystals continue steady in price. Chlorate d. per lb. Chlorate of soda, 7½d. Vitriol and muriatic n fair demand. Recovered sulphur rather easier at £5. 10s. k. Sicilian £5. c.i.f. for best thirds. Sulphate of copper is advanced price, £15. 5s. to £15. 10s f.o b. being current . Lead salts continue quiet, and prices if anything are ier. Acetate of lime, brown, is also slightly lower, spot and forward delivery. Grey acetate of lime ton. For aniline salt and oil there is no demand , and prices are merely nominal at 7d. per lb. for d 6¼d. for pure salt. Carbolic acid crystals are without any gn of recovery meantime. White powdered arsenic has been efreely at £10. 15s. to £11. nett at usual points. Yeliow prussiate till remains steady at 10¾d. for British makes. Prussiate ¼d. per lb. Sulpho-cyanides are still quiet. Potash, d carbonate, are a shade lower for spot and forward delivery. sulphate of alumina are without any material change in Tin crystals quoted on the spot at 6½d. to 6⅝d. Chloride uoted at £5. 15s. to £6. per ton for liquid 100°. Borax, os. per cwt. Trade in chemicals generally is still far from .

REPORT ON MANURE MATERIAL.

is been more activity during the week, and a larger business one, both in phosphatic and nitrogenous material, but prices t part still are rather in favour of buyers.

s more inquiry for 75/80% Florida Phosphate Rock, and ow buyers of cargoes at 8½d. per unit, United Kingdom and but sellers seem inclined to go in for an advance. Peace s is a shade easier, and 7¼d. would no doubt be business in n. Sellers of hot-air dried South Carolina have given way, r as 7d. per unit has been taken, which price would still be Continental descriptions of phosphate continue to ofier at , but without important business resulting.

lency of prices for both bones and bone meal is rather in buyers. £4. 2s. 6d. would no doubt be business for any River Plate bones afloat, and £4. 3s 9d. would be accepted for summer shipment. Crushed Kurrachee bones for ship- been selling at £4. 3s. 9d., but Continent having come rket, an advance of about 2s. 6d. would now have to be anything on spot, £4. 7s. 6d. lowest price. Owing to ls of Bombay bone meal, £4. 5s may be quoted as nearest od quality; inferior may be had at considerably less money. ing bones are still in demand in Liverpool at £4. to £4. 5s.

of soda is in fair retail demand at 9s. 1½d. to 9s. 3d. per t, according to quantity and test, but 9s. could scarcely be goes arrived or due.

and for dried blood continues, and home prepared is worth unit, delivered free to rails at works. Kainit is in rather ply at 45s. per ton, in bags, ex quay Liverpool. Super- unchanged.

THE METAL MARKETS.

N, WEDNESDAY.—Pig iron quiet; Scotch warrants closed l. Middlesbrough 37s. cash, and Hematite 46s. 2d. cash. uiet. Chili bars, G.O.B.'s and G.M.B.'s closed at d. cash, and £46. 2s. 6d. to £46. 10s. three months. Tin raits closed at £90. 10s. to £91. cash, and £90. 15s. to 6d. three months. Australian, £90. 15s. cash; English 3. 10s. to £94. Lead steady: Spanish, £10. 16s. 3d. 10. 17s. 6d. to £11. 2s. 6d. Silesian spelter, ordinary, £22. 10s. Quicksilver, first hands £7., second hands, d. nominal. Copper shares easier: Cape, 1⅛ to 1⅜; ¼ to 2¼; Libiola, 2⅞ to 3⅛; Mason and Barry, 4⅞ to into, 17 1/16 to 17 9/16; Tharsis, 5 11/16 to 5 13/16; Namaqua, 1 5/16 anulcillo ¾ to ⅞.

RHAMPTON, WEDNESDAY.—The nearness of next week's quarterly meeting tends to restrict business. Orders are insufficient to provide full work, and many mills and forges are very partially engaged under these circumstances. Business in pigs is slow, and inquiries are less numerous than generally at this date. Best bars, £8.; second sorts, £6. 15s. to £7.; common, £1. less; sheets, doubles, £7. to £7. 5s.; lattens, 15s. more; Derbyshire pigs, 44s. to 44s. 6d. at stations; Northampton, 43s. 6d. and upwards; Lincoln, 47s. 6d.

GLASGOW, WEDNESDAY.—Market steady, with good business. Scotch done at 40s. 9½d. cash; closing with buyers at 40s. 9d. cash and 40s. 11s. one month, sellers ask 40s. 10½d. cash and 41s. one month. Middlesbrough done at 37s. cash, also at 37s. and 37s 1d. one month; closing with buyers at 36s. 11d. cash and 37s. one month, sellers ask 1d. more. Hematite done at 46s. 2½d., 46s. 3d., and 46s. 2½d., cash, also at 46s. 4d. one month; closing with buyers at 46s. 2d. cash, sellers ask 46s. 2½d.

TAR AND AMMONIA PRODUCTS.

The benzol market still remains in a state of stagnation; prices consequently are without change from last week, 90% being quoted nominally at 1s. 10d., and 50/90's at 1s. 6d. Anthracene likewise has experienced no change in price from last week's quotations.

The sulphate of ammonia market does not show much in the way of improvement, but the change for the better in the Beckton price has been maintained, business being refused below £10. 2s. 6d. The Leith deliveries continue small, and prices may be stated as £10. 3s. 9d. to £10. 5s. Outside London makes are worth £10. 7s. 6d., while Hull values are stationary at £10. 5s. Prices at Liverpool remain *in statu quo*.

LIVERPOOL OIL AND COLOUR MARKET.

LIVERPOOL, WEDNESDAY.

OILS.—Palm oil having been dull all the week is to-day easier in price, with even now only a quiet demand. Sales of Lagos have been made at £21., Accra £19s. 10s., both transit. Olive though quiet is steady; the demand is limited, prices varying from £33. to £38. per tun according to quality. Linseed has not advanced, quotations being unaltered from last week, namely, 19s. 3d. to 20s. 6d. per cwt. in export casks. The business passing is only moderate, but sellers are firm and hold steadily at current prices. Rape: Belgium is in the market at 25s. per cwt. Cottonseed: Liverpool refined is steady. American has declined, and both sorts are now quoted 19s. 6d. per cwt. The market is steady, and in the absence of further arrivals an advance may be looked for next week. Castor oil: Good seconds Calcutta is slow of sale, and has changed hands at 1/16d. less than last week. First pressure French is also weaker at 2 13/16d. Tallow shows an inclination to improve, the inquiry being somewhat greater. Sales of North American have been made at 25s., and for choice sorts at 26s. per cwt. Resin: common remains at 4s. 3d. to 4s. 4½d., the demand for all grades being but moderate. Spirits of turpentine remains unchanged at 26s. 9d. to 27s., the demand being steady. Both American and Russian petroleum are without change.

COLOURS without change. Ochres: Oxfordshire, common, £10., medium, £12., best, £15.; Derbyshire, common, 40s., medium, 50s., best, 60s. Welsh, best, 70s., seconds, 50s., and common, 18s.; Irish, Devonshire, 40s. to 45s.; French, J.C., 55s. to 60s.; M.C., 65s. to 67s. 6d. Umber: Turkish quiet. Devonshire, 50s. to 55s. White lead, red lead, and oxide of zinc unchanged. Venetian red, £6. 10s. to £10. Cobalt: Prepared oxide, 10s. 6d.; black, 9s. 9d.; blue, 6s. 6d. Zaffres: No. 1, 3s. 6d.; No. 2, 2s. 6d. Oxide of iron: common, £6.; medium, £10.; finest, £20.

TYNE CHEMICAL REPORT.

TUESDAY.

Chemicals are very firm and an advance in the price of several products has taken place. Bleaching powder is scarce, and makers have difficulty in meeting present demand. Bleaching powder, softs, £7. 10s. per ton, hards, £7. 15s. per ton; caustic soda, 76/77%, £12. per ton, 70%, £10. 15s. per ton; recovered sulphur, 2 cwt. bags, £5. 5s. per ton; soda ash, 48%, £5. 8s. 9d. per ton, 52%, £5. 17s. 9d. per ton, 56%, £6. 6s. 9d. per ton; alkali, 36%, £4. 18s. 6d. per ton; white alkali, 48%, £6. 10s. per ton, 50%, £6. 15s. 6d. per ton, 52%, £7. per ton; hyposulphite of soda, £7. per ton in 5-7 cwt. casks, £7. 15s. per ton in 1 cwt. kegs, both in 10 ton lots; silicate of soda, 75° Tw. £3. per ton, 100° Tw. £4. per ton, 140° Tw. £4. 7s. 6d. per ton; soda crystals, in casks, £3. 5s. per ton gross weight, in 2 cwt. bags, £3. 5s. per ton nett weight; chlorate of potash, 7d. per lb. less 6%; pearl hardening, £3. 10s. per ton; pure white sulphate of alumina, £4. 10s. per ton; blanc fixe, £7. 10s. per ton; chloride of barium, £7. 10s. per ton; nitrate of baryta crystals, £19. per ton; nitrate of baryta, ground, £19. 10s. per ton; sulphide of barium, £7. per ton; carbonate of alumina,

£28. 10s. per ton; aluminate of soda, £33. 10s. per ton; hydrate of barium, £11. per ton.

Salt: South Durham firmer, owing to restricted output price is now about 9s. 6d. per ton nett.

Coals: The position as regards the Durham strike, remains unaltered, there seems little prospect of an early settlement. Northumberland coals are quoted as under:—Best Northumbrian steam, 10s. 9d. to 11s. per ton; small steam, 4s. 9d. to 5s. per ton; gas coal, 12s. per ton prompt. Coke, very scarce.

THE LIVERPOOL MINERAL MARKET.

The market continues rather flat. Manganese: Arrivals this week are very small whilst stocks have been materially reduced, and prices remain firm. Borate, 6¼d. per lb.; sulphate, £21. 10s.; oxalate, 1s. 6d. per lb.; chloride, £15.; carbonate, £12. 10s., steady. Magnesite: Raw lump continues quiet. Raw ground £6. 10s, and calcined, £12. 10s. Bauxite (Irish Hill brand) steady; lump, 20s.; seconds, 16s.; and thirds, 12s. French chalk: There are more arrivals this week, and a good business has been done at full figures. "Angel White" brand; silvery, 90s. to 92s 6d.; prime quality, 90s. to 95s.; and superfine, 105s. Barytes:- Carbonate scarce, especially best lump at 90s. to 95s.; nuts, 70s. to 80s.; whilst finest white sulphate is steady. "Angel White," No. 1, 70s.; No. 2, 60s. to 65s.; No. 3, 45s. Pumicestone steady. Iron ore steady; Bilbao shipments rather irregular; Irish and Cumberland easy. Santander and manganiferous, there is more doing. Emerystone steady, especially best qualities. No. 1 lump, £5. 10s. to £6.; smalls, £5. to £5. 10s. Fullers' earth quiet; best lump, 55s.; fine impalpable ground, £7.; "Emerald" ground, 80s. Scheelite, wolfram, tungstate of soda, and tungsten metal continue firm and unaltered. Chrome ore: There is a steady inquiry, especially for the higher qualities. Stocks practically nil. Antimony ore and metal, more doing; prices firmer. Asbestos very firm. Potters' lead ore, smalls, £10. 10s. to £11. 10s. Calamine easy. Strontia sulphate (celestine) quiet. Limespar unchanged, especially for English manufactured; old G.G.B. brand in demand at 50s. (ground). Felspar unchanged. Fluorspar: Best quality scarce. Ferro-manganese firmer, 75%, £12.; 85%, £13. 15s. Plumbago brisk. Spanish, £5.; best Ceylon lump at last quotations; Italian and Bohemian, £4. to £12. per ton. "Founders, £5. to £6.; Blackwell's "Mineraline," £10. French sand, 20s. to 22s. 6d. Ground mica, £45 to £50. China clay steady; common, 18s. 6d.; good medium, 22s. 6d. to 25s.; best, 30s. to 35s. (at Runcorn). Bog ore (oxide of iron) steady; finest quality, 22s. to 23s.

WEST OF SCOTLAND CHEMICALS.

GLASGOW, Tuesday.

The market remains languid, with business confined to mere retail proportions, but this does not appear to exert the natural influence on prices, which are stiffly upheld for the most part, if not actually advancing. Soda crystals have been put up 5s., and bleaching powder quotations are fractionally higher. Taking advantage of the occasion of spring holiday for Glasgow and neighbourhood, several of the chemical manufactories stopped gladly from Friday last till this morning, while all of them closed yesterday.

Sulphate of ammonia has undergone no change of any kind since last report, being tantalisingly quiet, and price stationary at about £10. 3s. 9d. prompt Leith, the same as a week ago.

Mineral oils and paraffins are also unchanged, and therefore not nearly active enough for producers' satisfaction. To-morrow, the mineral leases, crude oil works, refinery, etc., of the West Lothian Oil Co. (recently succumbed) comes under the hammer in Glasgow, at upset price £20,000.

The Scotch calico printers are just now endeavouring to form a combination for the raising of prices, long unremunerative.

Chief prices current are:—Soda crystals, £3. 2s. 6d., nett Tyne; alum in lump, £5. 10s., nett Glasgow; soda ash, 1⅜d., less 2½%, Tyne; caustic soda, white, 74°, £11. 10s., 70/72°, £10. 10s., 60/62°, £9. 7s. 6d., and cream 60/62°, £9. 2s. 6d., all nett Liverpool; bicarbonate of soda, 5 cwt. casks, £5. 15s., and 1 cwt. casks, £6. nett Tyne; refined alkali, 1⅜d., less 2½% Tyne; bleaching powder, £7. 9s. 3d. nett Tyne; saltcake, 37s. 6d.; borax, English refined, £30. and boracic acid, £37. 10s., nett Glasgow; bichromate of potash, 3¾d., less 12½% for Scotch and English deliveries (for export 3½d., less 10% f.o.b. Glasgow); bichromate of soda, 2¾d., less 10% for Scotch and English deliveries (for export 2½d., less 10% f.o.b. Glasgow); chlorate of potash, 6¾d., less 5% any port; nitrate of soda, 9s. 3d.; sulphate of ammonia, £10. 3s. 9d. f.o.b. Leith; salammoniac, first and second white, £ £35., less 5% any port; sulphate of copper, £14. 15s. less 5% Li paraffin scale (hard), 2 15/16d., and soft 2 15/16d. to 3d. per lb.; wax, 120°, semi-refined, 3⅜d. to 4d.; paraffin spirit (naphtha gallon; paraffin oil (burning) 5d., 5¼d. and 5½d. according at works, for Scotch buyers (English sales about 1d. lower (lubricating), 865°, £3. 10s. to £4., 885°, £5. 5s. to £ 890/895°, £6. to £8. Week's imports of raw sugar at Gr 36,225 bags.

New Companies.

British Phosphate Co., Limited.—This company was registere 24th ult., with a capital of £20,000., in £5. shares, to acquire any phosph coal, or other mines, lands, etc., in Canada and elsewhere, and to extrac work, sell, and otherwise deal with such phosphates, ores, coals, and oth The subscribers are:—

A. Horny, 15, Leadenhall-street, E.C., merchant	1
H. Voss, Holstein House, Beckenham, merchant	1
W. H. Hutchinson, 43, Fordwych-road, Brondesbury	1
G. Watts, Ivydean, Dornton-road, South Croydon	1
M. Hirsch, 29, Ickburgh-road, Upper Clapton	1
O. Trubenbach, 56, Ferdinand-strasse, Hamburg, merchant	1
Gustar Martens, 25, Rue du Robinet, Antwerp	1

Gas Economising Foreign Patents, Lim.—This company was regi the 28th ult., with a capital of £3,600., in £1. shares, to enter into an a with Mr. R. J. Hawkins, and to manufacture, refine, or otherwise treat, and supply hydrocarbons and other materials for carburetting and enrichin

Walter Scott, Limited.—This company was registered on the 26th u capital of £400,000., in £10. shares, to adopt an agreement dated March between Mr. W. Scott, of Newcastle, colliery owner, printer and publis and cement manufacturer, etc., of the one part, and Mr. C. H. Stanto company) of the other part, and to carry on the business of (1) mine owner proprietors, coal and iron masters, coke manufacturers, engineers, etc.; facturers of and dealers in cement, lime, plaster-of-paris, and whiting of The subscribers are:—

W. Scott, 21, Granger-street West, Newcastle, contractor	1
J. S. Scott, East Hebburn, Durham, mining engineer	1
M. T. Scott, The Felling, Durham, printer and publisher	1
C. T. Scott, 21, Grainger-street West, Newcastle, contractor	1
W. M. Scott, Jesus College, Cambridge, student	1
Mrs. Annie M. Rutherford, Elsington-villa, Newcastle	1
Miss Fanny E. Brook, Dalrymple-street, Edinburgh	1

Waterside Estate Co., Limited.—This company was registered on ult., with a capital of £9,000., in £50. shares, to acquire the mills and known as the Waterside Mill and Whitelands Weaving Shed, Ashton-un and Dukinfield, and to carry on the business of cotton spinners, bleache etc. The subscribers are:—

T. W. Mellor, The Reynors, Ashton-under-Lyne	1
G. Mellor, Holly Bank, Ashton-under-Lyne, manufacturer	1
J. E. Mellor, Helensfield, Dukinfield, manufacturer	1
A. E. Mellor, Springfield View, Ashton-under-Lyne, manufacturer	1
H. W. Mellor, Holly Bank, Ashton-under-Lyne, cotton broker	1
Miss M A. Mellor, The Reynors, Ashton-under-Lyne	1
Miss A. Mellor, The Reynors, Ashton-under-Lyne	1

Gazette Notices.

PARTNERSHIPS DISSOLVED.

Hayles Bros., Ealing, chemists and druggists.

W. T. Bailey and E. A. Bailey, under the style of T. Bailey and Sons, C drysalters and drug storekeepers.

Crawford and Sleigh, Liverpool, chemical manufacturers, as far as re P. Crawford.

BANKRUPTCY ACTS, 1883 AND 1890.

Receiving Orders.

Brown, Herbert Walter Hodisher and Brown, Lionel Warrington as the Avonbank Brick and Tile Co.), Bristol, brick and tile manufactu

Stevens, Jonathan, Devonport, chemist and druggist.

Adjudications.

Brown, H. W. H. and Brown, L. W (trading as the Avonbank Brick Co.), Bristol, brick and tile manufacturers.

Walsh, John Lawrence (trading as Walsh and Co.), Ainsdale, Lanc Liverpool, paint manufacturer.

Williams, Evan, Llanaelhaiarn, Carnarvonshire, manure merchant.

Sadler, D. M., The Thorns, near Stourbridge and Langley, firebrick ma

The Patent List.

list is compiled from Official sources in the Manchester Technical tory, under the immediate supervision of George E. Davis and R. Davis, who report professionally upon the value of Chemical

APPLICATIONS FOR LETTERS PATENT.

ements in Steam Traps. A. Bradshaw. 5,509. March 21.
ements in Gas Producers. O. W. Ketcham. 5,538. March 21.
ng Anthracene and Anthraquinone. B. Willcox. 5,539. March 21.
icture of Red Basic Naphthalene Colouring Matters. J. Y. John- 5,540. March 21.
lytic Deposition of Copper and other Metals. J. W. Swan. 5,546. ch 21.
Solder for Aluminium. R. Heaton. 5,560. March 22.
Manufacture of Perforated Fuel. T. O. Dixon. 5,575. March 22.
Improved Method of Collecting Dust. H. F. Horsnaill. 5,582. March 22.
Purifying and Filtering Water. S. L. West. 5,589. March 22.
Improvements in Artificial Fuel. F. A. Tagliaferro, A. A. Moore, and R Campion. 5,520. March 22.
Electric Batteries. L. Pyke and E. S. Harris. 5,645. March 22.
Improvements in Evaporators for the Distillation of Liquids. R. L. Newman. 7,659. March 22.
Smoke Consuming Grates. A. Thornalley. 5,674. March 23.
Improved Artificial Stone. T. D. Harries. 5,683. March 23.
Production of Oxygenated Pyrrazol Derivatives. J. Peleger and W. Krauth. 5,745. March 23.
Improvements in the Manufacture and Preparation of Yellow Colouring Matter. The Clayton Aniline Co., Ltd., J. Hall, and F. Moore. 5,761. March 24.
Smoke Consuming Furnaces. J. Sadler. 5,783. March 24.
Manufacture of Derivatives of Amido-Crotonic Acid. C. D. Abel. 5,811. March 24.
Electrical Tanning. C. K. Falkenstein and K. K. Falkenstein. 5,828. Mar. 26.
Improvement in the Manufacture of Soap. R. Bell and G. H. Barber. 5,938. March 26.

IMPORTS OF CHEMICAL PRODUCTS

AT

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

ek enaing March 26th.

Acetate—
iny, 5 pkgs. F. Stahlschmidt
Acid—
id, 7 pks. T. H. Lee
200 Beresford & Co.
4 A. & M. Zimmermann
5 F. Stahlschmidt
Acid & Acetone—
nd, 56 pkgs. A. & M. Zimmermann
e of Lime—
570 pkgs. H. Wallace & Co.
406 Johnson & Hooper
—
e, 100 c. 110 pks. Arnati & Harrison
100 ,,
—
nd, 67 pks. W. G. Jacobs
nia—
nd, 7 pks. H. Lorenz
es—
um, 21 cks. J. L. Lyon & Co.
43 W. Harrison & Co.
34 Leach & Co.
any, 19 P. Jantzen
um, 21 J. L. Lyon & Co.
20 W. Harrison & Co.
tone—
, 10c t. W. C. Bacon & Co.
100 Johnson & Hooper
50 Blackwood, Bryson, & Co.
400 Brandram Bros. & Co.
100 Co-op. L. Co.
ic Acid—
, 40 pks. J. Puddy & Co.
ic Potash—
ce, 7 pks. Spies Bros. & Co.
chouc—
agascar, 61 c. Kleinworth Sons & Co.
, 81 A. Frey & Co., Ld.
guay, 8 Prop. bull Wf.
agascar, 9 ,,
, 4 J. Walker & Co.
idies, 38 Lewis & Peat
ce, 35 Flageollet & Co.
agascar, 105 L. & I. D. Jt. Co.
bar, 80 Kleinworth Sons & Co.
ng, 16 Prop. Bull Wf.
icals *(otherwise unaescribed)*
any, 2 pks. T. H. Lee
, 39 A. & M. Zimmermann
nd, £10. ,,
6 M. Morrison & Co.
10 Barr, Moering & Co.
any, 25 T. H. Lee
7 A. & M. Zimmermann
50 A. Hunter & Co.
50 Perkins & Homer
e, 75 J. Burnett & Sons
any, 2 T. H. Lee
10 C. Aitkins & Nisbet
e, 2 Flageolett & Co.
2 Hernu, Peron, & Co.
dies, 1 H. B. Alder & Co.

Citrate of Lime—
Italy, 10 pks. Howards & Sons
Cream of Tartar—
Italy, 36 pks. Thames S. T. & L. Co., Ld.
France, 4 E. W. Carling & Co.
,, 15 W. C. Bacon & Co.
,, 1 Abbott, Smith, & Co.
Holland, 80 Middleton & Co.
,, 7 B. & F. Wf. Co., Ld.
France, 3 ,,
Italy, 20 Thames S. T. & L. Co., Ld.
Dyestuffs—
Aniline
Holland, 5 pkgs. R. Baelz & Co.
Annatto
B. W. I., 4 pkgs. C. Neilson & Son
Anthracene
France, 60 pkgs. Burt, Boulton, & Co.
Argols
Italy, 2,091 pks. B. Jacobs & Sons
,, 25 Thames S. T. & L. Co., Ld.
Cape, 20 Brown & Elmslie
Cochineal
Canaries, 10 pks. Swainston & Co.
,, 5 Sperling & Williams
New Zealand, 1 Trinder, Anderson, & Co.
Canaries, 7 Kuhner, Henderson, & Co.
,, 37 Sperling & Williams
,, 16 Marshall & French
Cutch
France, 25 pks. Hoare, Wilson, & Co.
E. Indies, 40 Wrightson & Son
Rangoon, 1,575 I. & G. Bulloch & Co.
Dividivi
E. Indies, 80 pks. Walker, Munsie, & Co.
Extracts
U. States, 100 pks. Skilbeck Bros.
France, 116 Prop. Chmbln's. Wf.
,, 1 Hernu, Peron, & Co.
Austria, 210 Boutcher, Mortimer, & Co.
Denmark, 25 Bailey & Leetham
,, 2 J. Sinclair & Son
U. States, 79 W. A. Bowditch
France, 120 L. J. Levinstein & Son
,, 6 Prop. Chmbln's. Wf.
Gambier
Singapore, 176 pks. Beresford & Co.
,, 185 Elkan & Co.
,, 394 J. H. & G. Scovell
,, 210 Leach & Co.
,, 420 R. & J. Henderson
,, 230 Baxter & Hoare
,, 2,297 L. & I. D. Jt. Co.
,, 1,091 Cox, Patterson, & Co.
Indigo
E. Indies, 6 chts. J. Forsey
,, 3 F. Huth & Co.
,, 16 F. W. Heilgers & Co.
Holland, 1 Ripley, Roberts, & Co.
E. Indies, 15 T. H. Allan & Co.
,, 20 Parsons & Keith
,, 16 Arbuthnot, Latham, & Co.
,, 205 L. & I. D. Jt. Co.
,, 3 Patry & Pasteur
,, 10 F. Huth & Co.
,, 21 L. & I. D. Jt. Co.
Holland, 1 Ripley, Roberts, & Co.
E. Indies, 5 Ernsthausen & Co.
Myrabolams
E. Indies, 1,366 pks. Elkan & Co.
,, 1,366 W. Shelcott
,, 2,730 J. P. Alpe & Co.
,, 1,779 Lucas & Spencer's Wf.
Orchella
E. Indies, 6 pkgs. J. P. Alpe & Co.
Sumac
France, 100 pks. Dutrulle, Solomon, & Co.
Italy. 200 W. Barter & Co.
,, 100 F. Roberts
,, 500 Beresford & Co.
,, 200 J. E. Scott
,, 200 W. Shelcott
,, 55 Page, Son, & Co.
Tanners' Bark
Melbourne, 44 t. Devitt & Hett
,, 45 Beresford & Co.
Germany, 13 Fisher, King, & Co.
Melbourne, 201 Baxter & Hoare
U. States, 18 B. & N. Wf. Co., Ld.
Turmeric
E. Indies, 860 pks. L. & I. D. Jt. Co.
China, 287 R. G. Hall & Co.
Cochin, 363 L. & I. D. Jt. Co.
E. Indies, 200 Anderson, Weber, & Smith
,, 33 Clarke & Smith
Farina—
Holland, 50 pkgs. Prop. Chmbln's. Wf.
Germany, 50 J. Knill & Co.
Glycerine—
Germany, £65. Beresford & Co.
Holland, 50 Spies Bros. & Co.
Glucose—
U. S., 250 pks. 250 c. Fellows, Morton, & Co.
,, 11,669 15,450 R. G. Hall & Co.
,, 700 700 Barrett, Tagant & Co.
,, 755 2,305 L. Sutro & Co.
,, 400 400 Lichtenstein & Co.
,, 250 250 Anderson, Weber & Co.
,, 75 375 Soundy & Son
,, 250 pkgs. 250 L. Sutro & Co.
,, 25 150 L. & J.D Jt. Co.
,, 400 400 Barrett, Tagant & Co.
,, 250 250 ,,
,, 250 1,500 L. & J.D. Jt. Co.
,, 1,000 1,000 Union Lighterage Co., Ld.
,, 1,100 1,606 R. G. Hall & Co.
San Francisco, 104 pkgs. 520 c. J. Greig
U. S., 250 pks. 250 c. Trier, Mayer & Co.
,, 380 1,430 L. Sutro & Co.
,, 50 274 Ohlenschlager Bros
,, 230 1,381 J. Knill & Co.
,, 2,000 4,000 J. Forsey
,, 50 274 H.A. Litchfield & Co.
,, 750 2,000 L. & J.D. Jt. Co.
,, 750 750 Baxter & Hoare
,, 2,010 5,615 L. Sutro & Co.
,, 200 11,00 Prop. Chamblu.'s Wharf
France, 400 pkgs. 400 c. Carey & Sons
Manganese—
Germany, 40 c. H. Johnson & Sons
Adelaide, 193 t. Harold Bros.
Manure—
Portugal, 29 t. G. Bennett & Sons
France, 60 J. Burnett & Sons
U. S., 1,100 C. H. & H. Nichols
Ochre—
France, 79 cks. Burrell & Co.
Germany, 1 ch. Phillipps & Graves
Holland, 4 pkg. ,,
France, 120 cks. W. Harrison & Co.
Olive Oil—
Italy, 2 tuns. 137 g. Beresford & Co.
,, 10 71 Ross & Deering
,, 11 L. & J. D. Jt. Co.
,, 4 117 Petty, Wood, & Co.
,, 1 248 Copland & Co.
,, 1 248 Beresford & Co.
,, 7 J. Deleuse
,, 1 L. & N. W. Co.
,, 126 L. & J.D. Jt. Co.
,, 140 J. Glyn & Co.
,, 250 H Gadson & Sons
France, 10 Millar & Formoy
,, 63 Pickford & Co.
,, 10 cs. Hernu, Peron, & Co.
Germany, 63 g. L. & J. D. Jt. Co.
Oxide of Zinc—
Holland, 100 brls. M. Ashby, Ltd.
Painters' Colours—
France, 4 pks. Flageollet & Co.
,, 10 Bennett S. S. Co., Ltd.
Germany, 20 G. Steinhoff
Holland, 6 T. Palmer
,, 18 cks. A. & M. Zimmermann
U. S., 15 pks. W. Ited
,, 100 J. Melvin
,, 10 Allan, Bros. & Co.
Germany, 18 L. & I. D. Jt. Co.
,, 10 C. Atkins & Nisbet
,, 14 cks. ,, ,,
,, 4 pks. T. H. Lee
,, 64 Poth, Hill & Co.
U. S., 29 J. Watson & Co
Italy, 5 pks. C. F. Gerhardt
Belgium, 18 Barr, Moering & Co.
Germany, 5 Phillipps & Graves
,, 4 pks. 22 cks. L. & I. D. Jt. Co.
,, 3 cks. Craven & Co
Paraffin Wax—
U. S., 450 pks. H. Hill & Sons
,, 39 brls. Page, Son & East
,, 50 C. H. Frank
,, 4,500 J. H. Usmar & Co.
,, 100 McDougall & Bouthron
,, 200 G. Tweedy & Co.
,, 160 Produce Brokers' Co.

Phosphate Rock—
Holland, 50 t. S. F. Waters & Co.
W. Indies, 240 Forbes, Abbott & Co.
Belgium, 165 Miller & Johnson

Plumbago—
Holland, 3 chts. W.H. Carey & Son
Italy, 100 bgs. B. Galloway

Potassium Carbonate—
France, 100 c. Beresford & Co.
,, 41 J. A. Reid
,, 100 E. J. Putz & Co.

Potassium Sulphate—
France, 23 pks. Weatherley, Mead & Co.

Quicksilver—
Spain, 7,000 flsks. M. M. Rothschild & Sons
Italy, 500 btls. L. & I. D. Jt. Co.

Saltpetre—
Germany, 60 cks. P. Hecker & Co.
E. Indies 1,434 bgs. C. Wimble & Co.
,, 173 Co-op. Lghtrge. Asscn.
,, 161 bgs. Henckell du Buisson & Co.
,, 2,229 Ralli Bros.
,, 911 Perkins & Homer

Tallow—
Belgium, 18 cks. H. Hill & Sons
Melbourne, 570 T. Skinner & Co.
,, 54 A. B. Curtis & Co.
N. Zealand, 8 Culverwell, Brooks & Co.
France, 14 H. Grey, Junr.
Adelaide, 59 Anning & Cobb

Tartaric Acid—
Italy, 20 pks. W. C. Bacon & Co.
France, 8 pks. B. & F. Wf. Co., Ltd.
Holland, 1 J. Owen
,, 1 Domeier & Co.
,, 10 Middleton & Co.

Ultramarine—
Germany, 54 pks. G. Steinhoff
Holland, 20 cks. Hernu, Peron & Co.
Belgium, 5 cs. Magee, Taylor & Co.
,, 5 pks. W. Harrison & Co.

White Lead—
Holland, 72 cks. J. Owen
,, 19 Burrell & Co.
France, 18 J. Watt & Son
Germany, 34 Randall Bros.
,, 18 Colthurst & Harding
,, 24 W. A. Rose & Co.
,, 28 Magee, Taylor & Co.
France, 20 brls. J. A. Drew
Holland, 45 T. & W. Farmiloe
Germany, 28 H. Lambert
,, 18 N. J. Fenner

Zinc Chloride—
U. S., 2 pks. Pitt & Scott

LIVERPOOL.

Week ending March 24th.

Barytes—
Rotterdam, 12 cks.
Antwerp, 1 bg.
In transit, 125 cks.

Boracic Acid—
Leghorn, 25 cks.

Castor Oil—
Genoa, 5 cs. R. Summer & Co.

Colours—
Antwerp, 8 brls.

Dyestuffs—
Sumac
Palermo, 1,102 bgs.
Tanning Extract
Antwerp, 45 cks.
Ghent, 5
Valonia
Trieste, 1 bg.
Smyrna, 253 t. Barry Bros.
,, 80 P. T. Apostolo
,, 73
,, 240 bgs Schroeder &Co.
Syra, 528
,, 515 Papayanni & Jeremias

Farina—
Fiume, 200 sks.

French Chalk—
Leghorn, 7 cs.

Glucose—
New York, 480 brls.

Glycerine—
Rotterdam, 10 carbs.
,, 5 cs. 3 bark tins.
Antwerp, 2 brls.

Kainit—
Hamburg, 800 bgs.

Magnesia—
Hamburg, 10 bgs.

Manganese Ore—
Carthagena, 2,100 t.
Fiume, 134 H. Browne & Co.

Manure—
Palermo, 2½ bxs.

Olive Oil—
Syracuse, 32 cks.

Paint—
New York, 1 cs.

Saltpetre—
Marseilles, 440 bgs.

Soapstone—
Genoa, 508 bgs.

Stearine—
Antwerp, 21 bgs.

Sulphur—
Catania, 70 t. 220 bgs. 78 brls.

Tallow—
Philadelphia, 152 hds.

Tartaric Acid—
Syracuse, 20 cks.

Ultramarine—
Bremerhaven, 20 cks.
Trieste, 30 cs.

Zinc Ashes—
Marseilles, 46 brls.

Zinc Oxide—
Antwerp, 96 brls.
St. Nazaire, 10

GLASGOW.

Week ending March 30th.

Arachide Oil—
Rotterdam, 1 ck. J. Rankine & Son

Barytes—
Rotterdam, 73 cks.
,, 20 J. Rankine & Son

Cream of Tartar—
Marseilles, 15 cks.

Copper Pyrites—
Huelva, 1,840 t. Tharsis & Co.

Colours—
Danzig, 5 cks.
Hamburg, 1 cs.

Chrome Ore
Ghemlek, 986 t J. & J. White
G. of Macri 1,429 ,,

Carbonate of Potash—
Hamburg, 38 cks.

Dyestuffs—
Alizarine
Rotterdam, 223 cks. 3 css.
Extract
Antwerp, 13 cks.
Valonia
Smyrna, 75 bgs. and a quantity
,, qnty. W. Bunten & Co.

Farina—
Antwerp, 20 bgs.

Glucose—
New York, 50 brls.

Madder—
Rotterdam, 2 cks J. Rankine & Son

Ochre—
Marseilles, 170 cks.
Rouen, 37

Oleine—
Amsterdam, 8 cks.

Olive Oil—
Smyrna, 19 brls. Bryce & Rumpff
,, 23 W. B. Dick & Co.

Paraffin Wax—
Philadelphia, 824 brls.

Phosphate of Lime—
Antwerp, 40 bgs.

Phosphate Rock—
W. Indies, 320 t. A. Cross & Sons

Potash—
Boston, 10 brls.

Ultramarine—
Hamburg, 4 css.

Waste Salt—
Hamburg, 157 cks.

White Lead—
Antwerp, 16 cks.
Rotterdam, 15 J. Rankine & Son

Zinc Oxide—
Antwerp, 50 cks.
Rotterdam, 105 10 brls. J. Rankine & Son

Zinc White—
Marseilles, 66 brls.

HULL.

Week ending March 26th.

Acids—
Hamburg, 8 cks. Wilson, Sons, & Co., Ld.
,, 6 Furley & Co.
Amsterdam, 49 W. & C. L. Ringrose

Barytes—
Rotterdam, 5 cks. Sissons Bros. & Co.
,, 96 Blundell, Spence & Co.
Bremen, 50 bgs. G. Holmes &Co.
Antwerp, 85 csks.

Chemicals (*otherwise undescribed*)
Antwerp, 35 pks. Wilsons, Sons, & Co.
Hamburg, 3 cs. Bailey & Leetham
Bremen, 5 3 cks. 9 carbys Veltmann & Co.
Marseilles, 3 pks. Wilson, Sons, & Co.
Rotterdam, 2 cs. W. & C. L. Ringrose
Antwerp, 1 ck. 105 pks. Wilson, Sons, & Co.
Hamburg, 155 pks. Wilson, Sons, & Co.
Dunkirk, 121 Wilson, Sons, & Co.

Chloride of Manganese—
Rotterdam, 1 ck. G. Lawson & Son

Colours—
Flushing, 21 cks. 7 cs. Zeeland S. S. Co.
Rotterdam, 5 pks. G. Lawson & Sons

Copperas—
Hamburg, 19 cks. Wilson, Sons, & Co., Ld.

Dyestuffs—
Alizarine
Rotterdam, 39 pks. 14 cks. 1 cs. W. & C. L. Ringrose
,, 1 brl. Aire & Calder N. Co.
,, 48 pks. W. & C. L. Ringrose
Argols
Bari, 4 cks. Wilson, Sons, & Co.
Sumac
Trieste, 100 bgs. Wilson, Sons, & Co.
Palermo, 300 ,,
,, 400 ,,
Valonia
Smyrna, 332 bgs.

Farina—
Stettin, 40 bgs. Wilson, Sons, & Co. Ld.
Haringen, 50 W. & C. L. Ringrose

Glucose—
New York, 105 brls. Wilson, Sons, & Co.
,, 445

Glycerine—
Amsterdam, 5 pks. W. & C. L. Ringrose

Ochre—
Marseilles, 41 cks. Wilson, Sons, & Co.

Oleine—
Antwerp, 1 ck. Wilson, Sons, & Co.
Rotterdam, 3 G. Lawson & Sons
Amsterdam, 8 W. & C. L. Ringrose
Antwerp, 20 brls. Wilson, Sons, & Co.
Rotterdam, 6 cks. G. Lawson & Sons

Potash—
Rotterdam, 12 cks.

Plumbago—
Hamburg, 6 cks.

Pitch—
Amsterdam, 13 cks. H. F. Pudsey

Phosphates—
Antwerp, 750 bgs. Wilson, Sons, & Co.
,, 500
,, 400 Bailey. & Leetham
Ghent, 300 t. Wilson, Sons, & Co.

Quicksilver—
Hamburg, 5 btls. Wilson, Sons, & Co.

Rosin—
Rotterdam, 20 cks. Hutchinson & Son

Soda—
Rotterdam, 100 brls. Hutchinson
,, 129 cks. Reckitt

Soap—
Marseilles, 3 cs. Wilson, Sons,

Sodium Nitrate—
Hamburg, 101 bgs. Wilson, Sons,

Stearine—
Rotterdam, 40 bgs. Wilson, Sons,
Antwerp, 42 bgs. 1 ck. ,,

Tartaric Acid—
Rotterdam, 1 ck. W. & C. L. Ri

Ultramarine—
Rotterdam, 2 css. G. Lawson

White Lead—
Rotterdam, 10 cks. Blundell,
Antwerp, 29 Bailey & Le
Rotterdam, 28 W. & C. L. Ri

Zinc Oxide—
Rotterdam, 25 brls. Sissons Bros.

TYNE.

Week ending March 26

Colours—
Antwerp, 2 cks.

Farina—
Hamburg, 30 bgs.

Pyrites Sulphate—
Huelva, 1,701 t. Scott

Saltpetre—
Hamburg, 10 cks.

Stearine—
Antwerp, 13 bgs.

Sulphur Ore—
Pomaron, 1,000 t. Mason &

Ultramarine—
Rotterdam, 20 css.

GOOLE.

Week ending March 16th.

Antimony—
Boulogne, 1 cd.

Caoutchouc—
Boulogne, 2 cds.

Dyestuffs—
Oil
Boulogne, 40 cds. 6 cs. 4 pks.
Cutch
Hamburg, 5 cs
Logwood Extract
Rotterdam, 6 cds.
Alizarine
Rotterdam, 79 cds.

Farina—
Hamburg, 100 bgs.
Delfszyhl, 450

Liquid Soda—
Hamburg, 10 brls.

Muriate Potash—
Rotterdam, 70 cds.

Potash—
Hamburg, 11 cds.
Dunkirk, 41 cks.
Calais, 9
,, 41 drms.

Saltpetre—
Rotterdam, 200 bgs.
Hamburg, 14 cds.
Antwerp, 135

Waste Salt—
Hamburg, 1,211 bgs.

GRIMSBY.

Week ending March 19th.

Colours—
Rotterdam, 3 pkgs.

Chemicals (*otherwise undescri*
Antwerp, 11 cks.

Farina—
Hamburg, 2 pkgs.

Indigo—
Rotterdam, 32 pkgs.

Kainit—
Hamburg, 500 pkgs.

EXPORTS OF CHEMICAL PRODUCTS

OF

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending March 30th.

Acetic Acid—
Adelaide, 1 t. £17
Brisbane, 18 c. 29

Acid—
Natal, 5 cs. £12

Alkali—
Natal, 1 t. £8

Aluminous Cake—
Calcutta, 27 t. 3c. £80

Ammonia (Liquid)—
Hamburg, 24 drs. £40
Boston, 10 cs. 20

Ammonium Nitrate—
Sydney, 3 t. £178

Amorphous Phosphorus—
Hong Kong, 2 cs. £20

Arsenic—
Melbourne, 9 t. 13 c. £127
,, 50 drs. 33
Barcelona, 12 cks. 32
Gothenburg, 18 c. 11

Bicarbonate of Soda—
Natal, 4 c. £4
Tangier, 1 t. 3 8
Auckland, 1 10
Dunedin, 1 7
Melbourne, 1 9

Bichromate of Potash—
Cape Town, 1 ck. £7

Borax—
Hamburg, 24 drs. £40

Carbonate of Ammonium—
Melbourne, 20 cs. £31
Adelaide, 5 c. 11
Sydney, 15 23
Rangoon, 4 8

Carbolic Acid—
Yokohama, 3 t. £102
Do. and for Hiogo, 10 c. 23
Dusseldorf, 106 cks. 932
Boulogne, 8 42
Cape Town, 2 cs. 18
Algoa Bay, 20 drms. 18
Barcelona, 1 t. 36
Valencia, 8 c.
Genoa, 2 5 17
Treport, 2 4 16
Genoa, 30 brls. 70

Caustic Soda—
Natal, 1 t. 2 c. £13
Sydney, 9 12
Normanton, 11 19
Auckland, 2 6 27
Batoum, 27 6 315
Dunedin, 9 18 109
Philadelphia, 105 1,117

Chemicals *(otherwise undescribed)*
Algoa Bay, 4 cks. £75
Madras, 4 cs. 18
Tangiers, 3 bxs. 17
Halifax, 1 t. 3 c. 6
Barcelona, 7 cs. 55
Salonica, 8 55
Natal, 1 5
Malta, 38 drms. 9
Boston, 6 pkgs. 12
New York, 6 cs. 40
Melbourne, 5 kgs. 27
Adelaide, 102 pkgs. 46
Melbourne, 9 cs. 16
Hiogo, 2
Natal, 4 3 29
Galatz, 10 cks. 11

Citric Acid—
Lisbon, 10 cs. £84
Hamburg, 2 12 c. 89
Valencia, 5 40
Rotterdam, 2 17
Genoa, 5 40
Seville, 15 111
Libau, 10 cks. 368
Danzig, 10 kgs. 85
Reval, 30 815
Hamburg, 1 t. 170
Philadelphia, 6 15 c. 1,093
Rotterdam, 5 40

Chlorate of Potash—
Lisbon, 5 c. £16
Sydney, 10 32
Libau, 5 kgs. 16

Chloride of Lime—
Natal, 10 cs. £11

Coal Products—
Toluol
Rotterdam, 14 pns. £110
Calais, 50 runs. 170
Tar
Galatz, 80 £46
Algoa Bay, 700 drs. 32
Calcutta, 200 runs. 105
St. John's, Nfd., 50 brls. 28
Ibrail, 60 34
Boston, 75 cks. 41
Galatz, 40 24
Ibrail, 90
Pitch
Cette, 1,520 t. £2,508
Dantzic, 200 440
St. Malo, 795 1,312
Dunkirk, 127 209
Constantinople, 100 brls. 31
Antwerp, 498 846
Galatz, 50 cks. 15
St. Johns, Nfd., 50 18
Antwerp, 400 650
New York, 1,000 518
Dunkirk, 516 943
St. Nazaire, 885 1,460
Boston, 250 108
Calais, 25 runs. 28
Ibrail, 15
Naphthaline
Boston, 79 cks. £117
Amsterdam, 20 40
Hamburg, 230 pkgs. 279
Naphtha
Calais, 25 runs. £79
Melbourne, 40 drs. 38
Creosote Oil
Treport, 15 brls. £40

Coal Products *(otherwise undescribed)*
Rio de Janeiro, 40 brls. £24
Coal Tar Dyes
Yokohama, 10 cs. £140
Benzol
Rotterdam, 18 drms. £170
,, 24 cks. 100
,, 40 763
,, 16 172
,, 15 pkgs. 222
Sydney, 175 42
Galatz, 25 brls. 20
Dantzic, 250 160
Anthracene
Dusseldorf, 52 cks. £398
,, 68 985
Aniline Salts
Barcelona, 10 runs. £80
Boston, 45 brls. 308
Aniline Oil
Barcelona, 7 drs. £240
Aniline Dyes
New York, 2 cks. £100
,, 3 168

Copperas—
Constantinople, 8 t. 17 c. £19

Cream of Tartar—
Melbourne, 1 t. £90
Cooktown, 3 c. £13
Dunedin, 4 19
Adelaide, 10 52
,, 5 26
Lyttleton, 1 95
Sydney, 6 9 639

Cyanide of Potassium—
Natal, 5 c. £25
Singapore, 5 cs. 33

Disinfectants—
Natal, 153 pkgs. £38
Melbourne, 10 cs. £22
,, 20 45
Sydney, 27 70
Algoa Bay, 7 13
Penang, 100 drms. £35

Fluoric Acid—
Algoa Bay, 1 cs. £13

Guano—
Barbadoes, 120 t. £1,210

Manganese Hyposulphite—
New York, 1 cs. £13

Manure—
Valencia, 226 t. £2,200
Hamburg, 48 t. 16 c. 175
Trinidad, 71 5 604
Antwerp, 50 525
Rotterdam, 97 6 414
Mauritius. 45 10 700
Sables d'Olonne, 135 959
Stettin, 54 14 223
Gothenburg, 48 16 211

Myrbane—
Sydney, 10 cs. £48

Nitrate of Potash—
Barbadoes, 5 c. £85

Oxalic Acid—
Madras, 10 c. £18

Phosphate—
Barcelona, 10 c. £40

Phosphoric Acid—
Bremen, 11 cars. £45

Phosphorus—
Dunedin, 10 cs. £64
Lisbon, 5 65

Potash—
Brussels, 4 c. £20
Bombay, 5 25
Natal, 30 t. 4,206

Salammoniac—
Galatz, 18 c. £28
Hamburg, 2 t. 72
Stettin, 3 7 112
Bourgas, 9 14
Amsterdam, 7 11
Batoum, 5 5 168
Constantinople, 2 10 79
Cologne, 1 2 33
Yokohama, 10 cs. 94
Gothenburg, 1 34

Salt Cake—
Ostend, 120 t. £210

Saltpetre—
Melbourne, 5 t. £108
Sydney, 3 14 c. 79
Dunedin, 1 22
Oporto, 1 17 38
Sydney, 1 22
Lisbon, 2 4 44

Sheep Dip—
Cape Town, 30 cs. £80
Algoa Bay, 25 drms. 50
Natal, 500 102
Durban, 12 pks. 35
E. London, 300 drms. 4 cs. 81
Cape Town, 150 450
Natal, 500 106 82 pks. 185
Algoa Bay, 350 100

Silicate of Soda—
Natal, 6 c. £2

Soda—
Wellington, 6 c. £3
Penang, 3 t 6 16
Natal, 4 cks. 8

Soda Ash—
Lisbon, 10 t. 8 c. £54

Soda Crystals—
Berbice, 16 c. £3
Natal, 15 3

Sodium—
New York, 3 t. 3 c. £490

Sulphate of Ammonia—
Jamaica, 59 t. £560
Sav. La Mar, 25 280
Kingston, 7 77
Trinidad, 66 3 666
Ostend, 50 5 513
Rotterdam, 81 7 850
,, 36 360
Demerara, 170 1,800
Hamburg, 353 3,761
Guadeloupe, 106 8 1,080
Ghent, 30 315
Demerara, 70 730
Hamburg, 50 15 550
Philadelphia, 67 2 700

Sulphate of Copper—
Bordeaux, 25 t. 5 c. £560
Batoum, 4 18 68
Bordeaux, 10 160
Fremantle, 2 cs. 26

Sulphur—
Algoa Bay, 2 t. 15 c. £37
Sydney, 2 19
Calcutta, 50 337
Dunedin, 13
Fremantle, 3 27 brls. 47
Lisbon, 150 127
Madeira, 10 84

Sulphuric Acid—
Las Palmas, 10 crbys. £10

Superphosphate—
Bordeaux, 25 t. £75

Strontium Nitrate—
New York, 3 t. 10 c. 99

Tartaric Acid—
E. London, 2 cs.
Hamburg, 10 c. £55
Adelaide, 10 61
,, 10 59
Sydney, 2 t. 1 207
Lyttleton, 5 35
Dunedin, 2 11
Sydney, 5 29

LIVERPOOL.

Week ending March 30th.

Soda Alkali—
Bilbao, 50 brls.
Odessa, 150

Alum—
Batavia, 16 c. 1 q. £6
Oporto, 5 t. 3 c. 30
Alexandria, 3 18
Beyrout, 3 10 21
Portland, 3 15 22
Calcutta, 20 18 104
Halifax, 2 10
Ibrail, 5 7 27
Malta, 1 1 5
Patras, 1 10 8
Rio de Janeiro, 1 2 7

Alum Cake—
Calcutta, 13 t. 14 c. 3 q. £47

Ammonia—
Valparaiso, 2 c. £23
Monte Video, 3 7

Ammonium Carbonate—
Copenhagen, 1 t. 2 c. 3 q. £37
Fairwater, 2 8 1 79
Riga, 9 2 16
Genoa, 10 16
Barcelona, 15 23

Ammonium Chloride—
Philadelphia, 37 cks. £463
Smyrna, 10 brls. 33
Ibrail, 1 t. 5 c. 3 q. 42
Philadelphia, 13 2 320
B. Ayres, 9 3 16

Ammonium Sulphate—
Antwerp, 85 t. 18 c. £940
Baltimore, 50 3 550
Barbadoes, 75 3 q. 825
Nantes, 10 3 3 110
St. John's, Nfd., 10 3 5
Valencia, 133 5 3 1,279
Bordeaux, 5 2 3 53
Oporto, 19 1 10
Tonnay, Charente, 163 t. 1 c. 3 q. 1,719
Genoa, 10 6 3 106
Charente, 50 600
Rotterdam, 50 550
Valencia, 111 3 2 1,158
Ghent, 50 518
Genoa, 5 10 58
Gd. Canary, 4 2 2 43
Barbadoes, 175 18 1 1,925
Rouen, 17 5 191
Ghent, 50 13 560
Demerara, 62 5 3 1,019

Arseniate of Soda—
New York, 3 cks.
Rouen, 12 brls.

Arsenic—
Rouen, 2 t. 5 c. 5 q. £17

Bicarbonate of Soda—
Alexandretta, 6 kgs.
Bilbao, 20 20 brls. 10 cks.
Cape Town, 25
Copenhagen, 113 2 cks.
Halifax, 240
London, 5
Rouen, 10 brls.
Rotterdam, 15 kgs.
St John's, Nfld. 12
Venice, 200
Ancona, 50
Danzic, 20 1 brl.
Leghorn, 10 cks. 24 kgs. 8 brls.
New York, 200 kgs. 100 cks.
Piræus, 4 cks.
St. Stephen, 100 kgs.
Stettin, 45

Bichromate of Soda—
Antwerp, 1 ck.
,, 100 kgs.
Calcutta, 3 cks.
,, 875 kgs.
Genoa, 35 cks.
Genoa, 8 t. 10 c. £238

Bleaching Powder—
Antwerp, 60 cks.
Boston, 96
Hankow, 20 brls.
Leghorn, 27
Lisbon, 61
New York, 157 cks.
Ancona, 30
Baltimore, 160
Boston, 532
Calcutta, 73
Genoa, 38
Havana, 25
Lisbon, 5
Montery, 5 kgs.
Naples, 17 cks.
New York, 517
Odessa, 14
Oporto, 17
Philadelphia, 48
Valparaiso, 10 cks.

Boracic Acid—
Rotterdam, 2 t. 6 c. 2 q. £92
B. Ayres, 6 12
Genoa, 16 2 33

Borax—
Stettin, 1 t. 18 c. 1 q. £59
Hamburg, 19 1 30
Matanza, 5 2 8
Cardenas, 9 13
B Ayres, 1 9 43
Rotterdam, 11 3 334
Syra, 20 brls.
Christiana, 10 cks.
Cienfuegos, 2 brls.
Hamburg, 2 cks.
Monte Video, 3

Borate of Lime—
Hamburg, 48 t. 2 q. £600

Brimstone—
Ghent, 7 bgs. £5
Vera Cruz, 10 7
Boston, 3,002 1,080

Carbolic Acid—
Hamburg, 14 t. 9 c. £645
Yokohama, 2 5 112
New York, 4 7 2 q. 77
Hamburg, 14 11 650
B. Ayres, 4 2 13
Genoa, 1 2 2 55

Carbonate of Soda—
Boston, 84 brls.
New York, 56

Caustic Soda—
Rio Grande do Sul 200 drms.
Rotterdam, 20 drms.
Savanilla, 10
Seville, 6
Singapore, 12
Yokohama, 100
Alicante, 54
Amsterdam, 23 72 kgs.
Ancona, 60
Barcelona, 75 85 cks.
Bari, 184
Bilbao, 28
Boston, 450
Carthagena, 25
Catania, 47
Fiume, 78
Galatz, 30
Genoa, 30
Halifax, 50
Havre, 18
Malaga, 88
Monte Video, 50
Naples, 65
New Fairwater, 36
New York, 200
Oporto, 30
Para, 6
Pernambuco, 48
Piræus, 45
Rangoon, 7
Rio de Janeiro, 30
Rouen, 107 10 brls.
Trieste, 96
Valencia, 30
Valparaiso, 275
Yokohama, 550
Alicante, 10
Antwerp, 30
B. Ayres, 100 brls.
Boston, 200 drms.
Calcutta, 107 60 kgs.
Carthagena, 20 brls. 65 drms.
Corunna, 16
Fairwater, 35
Galatz, 19 6 kgs.
Havre, 18
Hiogo, 200
Hong Kong, 10
Ibrail, 20
Libau, 18
Leghorn, 22
Malta, 128
Monte Video, 50
New Fairwater, 72
New Orleans, 50
New York, 1,232
Porto Alegre, 60 kgs.

Chemicals (*otherwise undescribed*)
Ibrail, 4 c. 2 q. £7
Hamburg, 1 t. 1 c. 33
Alexandria, 1 30
B. Ayres, 19 1 q. 32
Malta, 2 15 90
Genoa, 1 5 43
Venice, 10 160
Yokohama, 10 18
Odessa, 5 160

Chloride of Magnesium—
Rangoon, 7 drms.
Singapore, 10 c. £6

Chloride of Zinc—
Colombo, 2 t. £54
Bombay, 2 3 c. £38

Coal Tar—
St. John's, Nfld. 15 cks.

Copperas—
Piræus, 2 t. 4 c. £5
Alexandria, 4 15 8
Ibrail. 7 6 3 q. 17

Citric Acid—
Mexico City, 2 c. £16

Dried Blood—
Leghorn, 25 t. 4 c. 3 q. £179

Glycerine—
Rotterdam, 7 t. 10 c. £195
Hamburg, 10 25

Iron Oxide—
Valparaiso, 50 t. £134
Genoa, 12 c. 2 q. 9

Magnesia—
Corunna, 2 cs.
Para, 5

Manure—
Malaga, 19 t. £175
Valencia, 62 16 c. 3 q. 188
Antwerp, 15 8 1 71
Havre, 120 3 3 348
Rochefort, 200 4 1 612

Nitrate of Soda—
Fiume, 50 bgs.
Iquique, 9,040

Oxalic Acid—
Monte Video, 3 c. £10

Phosphorus—
Kingston, 1 cs. £13
Progresso, 5 65
Vera Cruz, 11 90
Shanghai, 21 208
Yokohama, 10 94
Kobe, 15 141
Hiogo, 15 159

Pitch—
Bordeaux, 30 cks.
Talcahuano, 136 t.
Copenhagen, 252
Havre, 588 6 c.

Potassium Bichromate—
Marseilles, 1 t. 2 c. £34
Alexandretta, 4 2 q. 8
Vera Cruz, 1 15 1 57

Potassium Chlorate—
New York, 11 t. £534
Copenhagen, 8 416
Boston, 10 470
Antwerp, 1 48
Hiogo, 20 934
Hong Kong, 3 150
Lisbon, 1 47
Odessa, 10 c. 24
Danzig, 100 kgs. 247
Sydney, 7 t. 10 c. 342
Yokohama, 2 10 117
Montreal, 4 10

Rock Salt—
Melbourne, 25 t.

Salt—
Algoa, 19 t.
Barbadoes, 36
Bonny, 25
Boston, 130
Brisbane, 100
Brussels, 2
Calcutta, 4,900
C. C. Castle 6¼
Malta, 5
New York, 94
,, 20 cks.
Old Calabar, 150 t.
Para, 121
Portland (Maine) 991
,, (Oregon) 685
Rio de Janeiro, 3 t. 2 c.
Rosario, 5 8
Rotterdam, 128
Seville, 1 t. c.
Abonnema, 10
Bakana, 17
Baltimore, 100
Boston, 65
Buguma, 6
Kansas City, 70
New Orleans, 300
Opobo, 110
Sierra Leone, 403
Sulymah, 100
Trinidad, 51
Valparaiso, 5

Salt Cake—
Baltimore, 156 t. 1 c. £41 7
Philadelphia, 25 3 75
Baltimore, 76 cks.
Philadelphia, 319
Baltimore, 525
Philadelphia, 437

Saltpetre—
Havana, 1 t. 13 c. £39
Maranham, 1 8 30
Pernambuco, 5 14 1 q. £129
Para, 12 15

Sheep Dip—
Rosario, 8 t. £215
San Francisco, 12 330
Guayaquil, 1 1 q. 48
Monte Video, 4 10 50

Silicate of Soda—
Monte Video, 94 cks.
Piræus, 114
Portland, 5
Salonica, 16

Soap—
Calcutta, 250 bdls.
Christiania, 15 115 bx
Drewin, 25 bxs.
Gibraltar, 350
Hong Kong, 100
Kingstown, 655
Malta, 30
C. C. Castle, 50
New York, 34 cs.
Port Natal, 50
Rangoon, 500 bxs.
Rotterdam, 25
St. John's, 3 cs.
St. Thomas, 700 bxs.
Salt Pond, 170
Shanghai, 5,000
Livingstone, 50 bxs.
Lor. Ferando, 500
Malta, 13 cs.
New York, 85
Port Elizabeth, 20
Port Natal, 111 bxs.
Rotterdam, 400 cs.
St. Johns, Nfld., 10 100 bx
Salonica, 40 bxs.
Salt Pond, 20
Smyrna, 2 brls.
Trinidad, 260 bxs.
Valparaiso, 10
Alexandria, 90
Bombay, 225
Belize, 450
Antigua, 150
Naples, 76 cs. T.
,, 106 A.
Marseilles, 30 A. Mar
,, 24 bxs. 10 cs.
Accra, 16 pkgs.
Alexandria, 10 bxs.
Algoa, 139 11 cs.
Barbadoes, 400
Bombay, 516 71
Calcutta, 9
Cape Town, 500
Christiania, 70
Durban, 26
E. London, 50 10
Genoa, 75
Gd. Canary, 40
Lagos, 100
Las. Palmas, 630
Surinam, 125 bxs.
Sav. La Mar, 50
Trinidad, 950
Valparaiso, 400 kgs. 5 cs.
Vera Cruz, 36 drms. 2

Soap Lyes—
Hamburg, 34 drms.

Soda Ash—
Baltimore, 533 tcs.
Bombay, 14 cks.
Boston, 27 kgs. 1,200 bgs.
Callao, 65 brls.
Halifax, 5
Hamilton, 200 bgs.
Kobe, 100 brls.
Maranham, 30
Monte Video, 50
New Orleans, 61
New York, 45 cks. 402 tc
Ancona, 6
Baltimore, 556 cks.
Boston, 1,200 bgs. 231 cl
Carupano, 6 brls.
Leghorn, 10 cks.
Monte Video, 25
Naples, 30
Montreal, 7 cks.
New York, 1,200 bgs. 56 cks.
Para, 10 kgs.
Philadelphia, 138 cks.
Rio Grande do Sul 100 brls.
Rio de Janeiro, 50
Toronto, 75

Soda Crystals—
Boston 100 kgs.
Gibraltar, 40 brls.
Valparaiso, 100
Boston, 280 cks.
Malta, 25 brls.
Piræus, 10

Sodium Biborate—
Stettin, 3 c. 1 q.
Hamburg, 1 t. 11 c. 2 q
Rotterdam, 2 11 2
B. Ayres, 100 cks.

Sodium Chlorate—
New York, 4 t.
Genoa 10 c.
Stettin, 1
Hamburg, 1

Sodium Chlorate (*Contd.*)—
Hamburg, 20 kgs.
Rotterdam, 10
Sodium Fluoride—
Hamburg, 5 £6 0
Sodium Hyposulphite—
Portland (Or.), 2 t. 10 c. £21
Sodium Nitrate—
Carthagena, 5 t. 13 c. 1 q. £56
St. John's, Nfd., 1 2 11
Fiume, 6 4 64
Sugar of Lead—
Calcutta, 1 t. 8 c. £44
Portland (Maine), 9 13
Sulphur—
Para, 2 t. 5 c. £23
Sulphate of Copper—
Barcelona, 12 t. 9 c. £195
M. Video, 6 6 1 q. 83
Tarragona, 25 5 351
Ghent, 1 16 23
Antwerp, 4 17 2 71
Marseilles, 14 15 208
Genoa, 5 15 84
Leghorn, 3 9 3 50
Marseilles, 11 6 2 145
B. Ayres, 20 289
Barcelona, 11 8 109
Rouen, 117 t. £1,732
Genoa, 9 5 c. 1 q. £135
Sulphate of Soda—
Leghorn, 7 brls.
Sulphuric Acid—
Penang, 33 cs. £25
Sulphide of Antimony—
Montreal, 2 c. 2 q. £7
Superphosphate—
Gd. Canary, 2 t. 2 c. 1 q. £9
Valencia, 50 1 3 169
Tartaric Acid—
Samarang, 1 c. £7
Montreal, 1 t. 4 137
Waste Salt—
Hamburg, 100 bgs.

GLASGOW.

Week ending March 30th.

Asbestos—
Rangoon, 4½ c. £29
Benzol—
Rotterdam, 12 drms. £165
,, 26 370
Bichromate of Potash—
Antwerp, 50¾ c. £85
Rotterdam, 1 ck. 11
Lisbon, 12 c. 20
New York, 597 1,044
Rouen, 3 t. 12½ c. 120
Italy, 31 ¼ 908
,, 28¾ 20
Gothenburg, 4 17¼ 176
Rouen, 846 1,207
Antwerp, 477¾ 666
Bichromate of Soda—
New York, 335 c. £430
Rouen, 11 t. 19¾ 250
Italy, 13½ 50
Gothenburg, 1 1¾ 21
Bleaching Powder—
Calcutta, 615 c. £260
Brimstone—
Madras, 5 t. 2¼ c. 49
Chemical Manure—
Valencia, 299½ t. £2,441
Demerara, 75 900
Chemicals (*otherwise undescribed*)
Bombay 11¾ c. £110
Rangoon, 6 t. 12 c. £24
Lisbon, 57
Chloride of Lime—
Hong Kong, 15 t. £200
Coal Tar Pitch—
Chili, 171 t. 10½ c. £346
Bombay, 73 4½ 188
Santander, 651 1 1,074
,, 252 6 415
Antwerp, 99 12 124
Calcutta, 18 2 40
Coal Tar—
Baltimore, 12 t. 6 c £30
Bombay, 14 6½ 47
Halifax, 12½ 27
Bombay, 24 18¾ 62
Calcutta, 29 65
Copperas—
Bombay, 16½ c. 81
Cream of Tartar—
Rotterdam, 2 cks. £60
Crude Paraffin—
Hong Kong, 7 c. £160
Dyestuffs—
Cutch
Halifax, 34 c. £45
Fustic Extract
Halifax, £24
Indigo
New York, 142 c. £3,266
Logwood Extract
Halifax, £147
Farina—
Antwerp, £5 12s.
Rouen, 24¾ c. 20
Rotterdam, 10 bgs. 16
Linseed Oil—
Chili, 160½ c. £216
Brisbane, 89½ 101
Manganese—
Italy, 41 c. £21
Naphtha—
Rouen, 22 t. 14¼ c. £364
Nitrate of Lead—
Halifax, 1 t. 4½ c. £23
Rouen, 1 2 22
Nitrate of Soda—
Lisbon, 26 t. 1¾ c. £235
Painters' Colours—
Brisbane, £61
Hong Kong, 74 10
Paraffin Wax—
Hong Kong, 1 t. 15½ c. £60
Japan, 24½ 610
Bilbao, 2 65
Rouen, 15¾ 23
Antwerp, 3 4 120
Italy, 21 9 514
Bombay, 2 9 102
Pitch—
Baltimore, 56 t. 13 c £85
Amsterdam, 150 173
Recovered Manganese—
New York, 204 c. £98
Rosin—
Bombay, 16 t. 11 c. £64
Salt—
Brisbane, 304 t. 10 c. £298
Shellac—
New York, 300 c. £900
Soap—
Bombay, 6 t. £103
Chili, 2½ c. £23 10s.
,, 1 5 24
Halifax, 52 45
Barbadoes, 8½ 140
Soda Ash—
Baltimore, 25 t. 12 c. £166
Stockholm Tar—
Bombay, 44¾ c. £16 10s.
Sugar of Lead—
Bombay, 66½ c. £52
Sulphate of Ammonia—
Valencia, 166 t. 6¾ c. £2,070
Bilbao, 103
Demerara, 244 16 2,856
Straits, 153 t. 11 c. £1,650
Sulphate of Potash—
New York, 2 t. 7¾ c. £25
Sulphuric Acid—
Rangoon, 42 t. 17 c. £427
Madras, 8 6¼ 66
Superphosphate—
Valencia, 59 t. 5½ c. £180
Tin Red Liquor—
Lisbon, £34
White Lead—
Chili, 49½ c. £49
Brisbane, 10 t. 2¾ 220
Lisbon, 1 1¾ 20

HULL.

Week ending March 26th.

Alkali—
Trieste, 10 cks.
Aluminium—
Rotterdam, 1 cs. 1 ck.
Benzol—
Rotterdam, 36 cks.
Bitumen—
Catania, 67 cks.
Caustic Soda—
Fiume, 86 drms.
Stettin, 115
Trieste, 17
Venice, 50
Chemicals—
Bari, 10 cs. 19 cks.
Christiania, 10 cks. 6 pkgs. 622 slabs.
Gothenburg, 30 cs. 4 cks. 323
Hamburg, 251 cs. 14 pkgs.
Harlingen, 57 cks.
Libau, 1 cs. 30 cks 71 pks.
Rotterdam, 60 65 1 pkg.
Stettin, 38 cks. 18 pkgs.
Trieste, 84
Venice, 15
Cottonseed Oil—
Antwerp, 700 c.
Flushing, 205
Gothenburg, 100
Hamburg, 2,092
Harlingen, 86
Libau, 7
Rotterdam, 1,913
Stettin, 572
Trieste, 798
Dyestuffs (*otherwise undescribed*)
Antwerp, 1 drum
Hamburg, 1 cs.
Libau, 1 2 cks.
Stettin, 6 4 66 bgs.
Linseed Oil—
Antwerp, 106 c.
Bergen, 88
Christiania, 414
Christiansand, 53
Gothenburg, 8
Hamburg, 362
Palermo, 18
Rotterdam, 51
Manure—
Dunkirk, 891 bgs.
Ghent, 816
Mineral White—
Rotterdam, 200 bgs.
Ochre—
Hamburg, 1 cs.
Painters' Colours—
Antwerp, 34 cks. 48 pkgs.
Christiania, 1 32 pks.
Christiansand, 2 drms.
Dunkirk, 1 drum.
Gothenburg, 1 cs.
Hamburg, 96 cks.
Libau, 3
Palermo, 2
Rotterdam, 1 cs. 8 5 drms. 1 pkg.
Stettin, 1
Trieste, 8
Pitch—
Antwerp, 86 t.
Venice, 424
Tallow—
Harlingen, 9 cks.
Tar—
Stettin, 5 cks.
Varnish—
Antwerp, 14 cs. 2 drums
Hamburg, 2 drums 1 cs. 2 cks.

TYNE.

Week ending March 26th.

Alkali—
Amsterdam, 764 c. 2 q.
Christiania, 107
Odense, 122
Rotterdam, 157
Copenhagen, 104
,, 402
Ammonium Sulphate—
Genoa, 1,000 c.
Barytes Carbonate—
Hamburg, 200 c.
San Francisco, 210
Rotterdam, 1,030
New York, 2,040
Bleaching Powder—
Amsterdam, 1,394 c. 1 q.
Antwerp, 541
Hamburg, 1,006
Christiania, 325
Malmo, 44
Genoa, 136
San Francisco, 616
Rotterdam, 401
Drontheim, 202
Copenhagen, 53
Caustic Soda—
Antwerp, 923 c.
Hamburg, 598
Genoa, 789
San Francisco, 3,826
Rotterdam, 88
Huelva, 7
Constantinople, 203
Amsterdam, 45 3 q.
New York, 4,352
Carbonate of Lime—
Odense, 81 c.
Creosote—
Constantinople, 509 brls.
Gypsum—
New York, 1,110 c.
Litharge—
Malmo, 28 c.
Genoa, 27
Magnesia—
Antwerp, 4 c.
Hamburg, 94
Genoa, 1
New York, 11
Oxalic Acid—
Genoa, 124 c.
Painters' Colours—
Copenhagen, 55 c.
Rock Sulphur—
Copenhagen, 400 c.
Soda Ash—
Hamburg, 156 c.
Odense, 257
Genoa, 200
San Francisco, 2,207
Constantinople, 1,209
Soda Crystals—
Amsterdam, 118 c. 3 q.
Soda—
Stavanger, 103 c.
Odense, 328
San Francisco, 625
Rotterdam, 89
Sodium Hyposulphite—
Antwerp, 23 c.
San Francisco, 400
Sulphur—
Hamburg, 4,000 c.
Christiania, 500
Tar—
Constantinople, 1,010 c.
White Lead—
Copenhagen, 38 c.

GOOLE.

Week ending March 16th.

Benzol—
Rotterdam, 20 cks.
Chemicals (*otherwise undescribed*)
Antwerp, 9 cks.
Rouen, 2
Hamburg, 5 css.
Rotterdam, 252
Coal Products—
Hamburg, 81 cks.
Rotterdam, 193
Bleaching Powder—
Ghent, 30 cks.
Dyestuffs (*otherwise undescribed*)
Antwerp, 1 ck.
Boulogne, 3
,, 2 css.
Manure—
Dunkirk, 978 bgs.
Antwerp, 92
Ostend, 212
Bruges, 327
Pitch—
Antwerp, 506 t.
Dunkirk, 276

GRIMSBY.

Week ending March 19th.

Chemicals (*otherwise undescribed*)
Dieppe, 54 cks. 15 pkgs.
Hamburg, 2 8 12 css.
Rotterdam, 4
Coal Products—
Dieppe, 55 cks.
Manure—
Esbjerg, 1,000 bgs.
Pitch—
Antwerp, 50 t.

PRICES CURRENT.

WEDNESDAY, April 6th, 18

Prepared by Higginbottom and Co., 116, Portland Street, Manchester.

The values stated are f.o.r. at maker's works, or at usual ports of shipment in U.K. The price in different localities may t

	£	s.	d.
Acids:—			
Acetic, 25 % and 40 % .. .. per cwt.	7/- & 11/-		
,, Glacial .. .. ,,	50/-		
Arsenic, S.G., 2000° .. .. ,,	0	13	6
Fluoric .. .. per lb.	0	0	3¼
Muriatic (Tower Salts), 30° Tw. .. .. .. per bottle	0	0	10
,, (Cylinder), 30° Tw. .. .. ,,	0	3	0
Nitric 80° Tw. .. .. per lb.	0	0	2¼
Nitrous .. .. ,,	0	0	1¾
Oxalic .. .. nett ,,	0	0	3
Phosphoric, 1750° .. .. ,,	0	1	2½
Picric .. .. ,,	0	0	10¼
Sulphuric (fuming 50 %) .. .. per ton	15	10	0
,, (monohydrate) .. .. ,,	5	10	0
,, (Pyrites, 168°) .. .. ,,	3	5	0
,, (,, 150°) .. .. ,,	1	5	0
,, (free from arsenic, 145°) .. .. .. ,,	1	7	6
Sulphurous (solution) .. .. ,,	2	15	0
Tannic (pure) .. .. per lb.	0	1	2
Tartaric .. .. ,,	0	1	0
Arsenic, white powdered .. .. nett per ton	10	15	0
Alum (loose lump) .. .. ,,	5	5	0
Alumina Sulphate (pure) .. .. ,,	5	0	0
,, ,, (medium qualities) .. .. .. ,,	4	15	0
Aluminium .. .. per lb.	2s. 8d. to	0	3	2
Ammonia, ·880=28° .. .. per lb.	0	0	3
,, =24° .. .. ,,	0	0	1¾
,, Carbonate .. .. nett ,,	0	0	3¼
,, Muriate .. .. per ton	21	0	0
,, ,, (sal-ammoniac) 1st & 2nd .. per cwt.	35/- & 33/-		
,, Nitrate .. .. per ton	40	0	0
,, Phosphate .. .. per lb.	0	0	10½
,, Sulphate (grey), London .. .. .. per ton	10	7	6
,, ,, (grey), Hull .. .. ,,	10	5	0
Aniline Oil (pure .. .. per lb.	0	0	7
Aniline Salt ,, ... ,,	0	0	6½
Antimony .. .. per ton	45	10	0
,, (tartar emetic) .. .. per lb.	0	1	0
,, (golden sulphide) .. .. ,,	0	0	10
Barium Chloride .. .. per ton	7	10	0
,, Carbonate (native) .. .. ,,	3	10	0
,, Sulphate (native levigated) .. .. .. ,,	45/- to 75/-		
Bleaching Powder, 35 % .. .. nett ,,	7	10	0
,, Liquor, 7 % .. .. ,,	2	10	0
Bisulphide of Carbon .. .. ,,	11	15	0
Chromium Acetate (crystal .. .. per lb.	0	0	6
Calcium Chloride .. .. per ton	2	5	0
China Clay (at Runcorn) in bulk .. .. .. ,,	17/6 to 35/-		
Coal Tar Dyes:—			
Alizarine (artificial) 20 % .. .. per lb.	0	0	8¾
Magenta .. .. ,,	0	3	9
Coal Tar Products			
Anthracene, 30 % A, f.o.b. London .. per unit per cwt.	0	1	2½
Benzol, 90 % nominal .. .. .. per gallon	0	1	10
,, 50/90 ,, ... ,,	0	1	6
Carbolic Acid (crystallised 40°) .. .. .. per lb.	0	0	4⅞
,, (crude 60°) .. .. per gallon	0	1	2
Creosote (ordinary) .. .. ,,	0	0	1
,, (filtered for Lucigen light) .. .. ,,	0	0	2
Crude Naphtha 30 % @ 120° C. .. .. .. ,,	0	0	11
Grease Oils, 22° Tw. .. .. per ton	2	5	0
Pitch, f.o.b. Liverpool or Garston .. .. .. ,,	1	14	0
Solvent Naphtha, 90 % at 160° .. .. .. per gallon	0	1	0
Coke-oven Oils (crude) .. .. ,,	0	0	3
Copper .. .. per ton	45	12	6
,, Sulphate .. .. ,,	15	10	0
,, Oxide (copper scales) .. .. ,,	45	0	0
Glycerine (crude) .. .. ,,	13	0	0
,, (distilled S.G. 1250°) .. .. ,,	45	0	0
Iodine .. .. nett, per oz.	0	0	9
Iron Sulphate (copperas) .. .. per ton	1	12	6
,, Sulphide (antimony slag) .. .. ,,	2	0	0
Lead (sheet) for cash .. .. ,,	12	5	0
,, Litharge Flake (ex ship) .. .. ,,	14	5	0
,, Acetate (white ,,) .. .. ,,	25	10	0
,, ,, (brown ,,) .. .. ,,	17	10	0
,, Carbonate (white lead) pure .. .. .. ,,	20	0	0
Nitrate .. .. ,,	20	5	0
Lime, Acetate (brown) .. .. per ton	6	5	
,, ,, (grey) .. .. ,,	10	0	
Magnesium (ribbon and wire) .. .. per oz.	0	2	
,, Chloride (ex ship) .. .. per ton	2	7	
,, Carbonate .. .. per cwt.	1	17	
,, Hydrate .. .. per ton.	17	0	
,, Sulphate (Epsom Salts) .. .. per ton	2	19	
Manganese, Sulphate .. .. ,,	17	15	
,, Borate .. .. per cwt.	2	15	
,, Ore, 70 % .. .. per ton	4	5	
Methylated Spirit, 61° O.P. .. .. per gallon	0	2	
Naphtha (Wood), Solvent .. .. ,,	0	4	
,, ,, Miscible, 60° O.P. .. .. .. ,,	0	4	
Oils:—			
Cotton-seed .. .. per ton	19	10	
Linseed .. .. ,,	20	0	
Lubricating, Scotch, 890°—895° .. .. .. ,,	7	5	
Petroleum, Russian .. .. per gallon	0	0	
,, American .. .. ,,	0	0	
Potassium (metal) .. .. per oz.	0	3	
,, Bichromate .. .. per lb.	0	0	
,, Carbonate, 90% (ex ship) .. .. .. per ton	18	5	
,, Chlorate .. .. per lb.	0	0	
,, Cyanide, 98% .. .. ,,	0	2	
,, Hydrate (Caustic Potash) 80/85 % .. per ton	22	10	
,, ,, (Caustic Potash) 75/80 % .. ,,	21	0	
,, ,, (Caustic Potash) 70/75 % .. ,,	20	15	
,, Nitrate (refined) .. .. per cwt.	1	2	
,, Permanganate .. .. per cwt.	3	10	
,, Prussiate Yellow .. .. per lb.	0	0	
,, Sulphate, 90 % (ex ship) .. .. .. per ton	9	15	
,, Muriate, 80 % (do.) .. .. .. ,,	7	17	
Silver (metal) .. .. per oz.	0	3	
,, Nitrate .. .. ,,	0	2	
Sodium (metal) .. .. per lb.	0	3	
,, Carb. (refined Soda-ash) 48 % .. nett per ton	6	2	
,, ,, (Caustic Soda-ash) 48 % .. ,, ,,	5	5	
,, ,, (Carb. Soda-ash) 48% .. .. ,, ,,	5	7	
,, ,, (Carb. Soda-ash) 58 % .. .. ,, ,,	6	5	
,, ,, (Soda Crystals) .. .. .. ,, ,,	3	9	
,, Acetate (ex-ship) .. .. ,,	16	15	
,, Arseniate, 45 % .. .. ,,	10	10	
,, Chlorate .. .. per lb.	0	0	
,, Borate (Borax) .. .. nett, per ton.	30	0	
,, Bichromate .. .. per lb.	0	0	
,, Hydrate (77 % Caustic Soda) (f.o.b.) nett pr. ton (10 ton lots)	11	10	
,, ,, (74 % Caustic Soda) ,, ,, ,, (10 ton lots)	11	10	
,, ,, (70 % Caustic Soda) ,, ,, ,, (10 ton lots)	10	10	
,, ,, (60 % Caustic Soda) .. ,, ,, (10 ton lots)	9	7	
,, ,, (60 % Caustic Soda, cream) (f.o.b.) ,, (10 ton lots)	9	2	
,, Bicarbonate .. .. ,,	6	12	
,, Hyposulphite .. .. ,,	7	15	
,, Manganate, 25% .. .. ,,	9	0	
,, Nitrate (95 %) ex-ship Liverpool .. .. per cwt.	0	9	
,, Nitrite, 98 % .. .. per ton	30	0	
,, Phosphate .. .. ,,	15	10	
,, Prussiate .. .. per lb.	0	0	
,, Silicate (glass) .. .. per ton	5	7	
,, ,, (liquid, 100° Tw.) .. .. .. ,,	4	5	
,, Stannate, 40 % .. .. per cwt.	3	5	
,, Sulphate (Salt-cake) .. .. per ton.	1	17	
,, ,, (Glauber's Salts) .. .. ,,	1	15	
,, Sulphide .. .. ,,	7	15	
,, Sulphite .. .. ,,	6	12	
Strontium Hydrate, 100% .. .. ,,	8	10	
Sulphocyanide Ammonium, 95 % .. .. per lb.	0	0	
,, Barium, 95 % .. .. ,,	0	0	
,, Potassium .. .. ,,	0	0	
Sulphur (Flowers) .. .. per ton.	10	0	
,, (Roll Brimstone) .. .. ,,	8	0	
,, Brimstone : Best Quality (nominal) .. ,,	5	10	
Superphosphate of Lime (26 %) .. .. ,,	2	7	
Tallow .. .. ,,	26	10	
Tin (English Ingots) .. .. ,,	90	10	
,, Crystals .. .. per lb.	0	0	
Zinc (Spelter) .. .. per ton	22	5	
,, Chloride (solution, 96° Tw.) .. .. .. ,,	6	10	

THE

CHEMICAL TRADE JOURNAL

AND

OIL, PAINT and COLOUR REVIEW.

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E TENDERS.

ON AND NORTH-WESTERN RAILWAY CO.'S WAREHOUSES, SOUTH DOCK, SWANSEA.

FOR SALE BY TENDER,

OUT 450 tons of BRIMSTONE, unmixed, best
kinds (slightly damaged), ex s.s. "Escuriel," lying at the London and North-
n Railway Company's Warehouses, South Dock, Swansea, in lots of not less
tons, to suit purchasers.
d tenders—at per ton ex Warehouse—marked "Tenders for Brimstone," to
ed with us, the undersigned, on or before THURSDAY, the 21st day of April,
y 12 o'clock, noon.
lot or lots to be taken with all faults or errors of any description.
be viewed at any time upon application to the undersigned.
s—Nett Cash against delivery.
highest or any tender not necessarily accepted.
ks may be obtained on application.

(Signed) T. HERSCHEL JONES & CO.,
Metal and Chemical Merchants.

side-street, Swansea.

COUNTY BOROUGH OF BURY.

TO SULPHURIC ACID MAKERS.

E Gas Committee of the Bury Corporation are
repared to receive Tenders for the supply of about 300 tons of Sulphuric Acid
manufacture of Sulphate of Ammonia, for a period of one year from the 1st
892. Form of Tender and conditions may be obtained upon application to
ler-signed.
ers to be endorsed "Tender for Sulphuric Acid," to be sent to J. Haslam,
own Clerk, Bury, on or before the 26th inst.

By Order,
W. H. S. VENDALL,
Engineer and Manager

Works, Elton, Bury,
April 13th, 1892.

E ADVERTISEMENTS.

EMICALS and Phosphates.—An Experienced
Manager in above seeks re-engagement. Will be at liberty soon. Address
are of C. Birchall, advertisement contractor, Liverpool.

R SALE.—Filter Press, with 40 two-feet plates,
n good order. Also, small Experimental Press. W 140, *Chemical Trade*
l.

Advertisements.

aid Advertisements of Situations Vacant, Premises on Sale or To be Let,
laneous Wants, and Specific Articles for Sale by Private Contract are
d in the *Chemical Trade Journal* at the following rates:—

30 Words and under ..... 2s. 0d. per insertion.
Each additional 10 words ..... 0s. 6d. ,,

rtisements of Situations Wanted are inserted at one-half the rates when prepaid, viz.:—

30 Words and under ..... 1s. 0d. per insertion
Each additional 10 words ..... 0s. 3d. ,,

PUBLIC DANGERS.

IN the present day of wholesale legislation, the opportunities afforded the would-be philanthropist of playing this *rolé* are legion. There certainly is no lack of persons who are only too eager to achieve greatness for themselves, by providing means whereby the evils which all flesh is proverbially prone to, may hereafter be annihilated, thus perpetuating themselves for all posterity in the minds of the ever grateful and considerate public.

If there is one time more than another when benefactors of this kind shine resplendent, it is when an accident happens, attended with results of more than ordinary moment. The numerous accidents which occurred not many years since (and which crop up now with a certain amount of persistence), through the upsetting or breaking of petroleum lamps, or through the careless storage and handling of this article, were used as powerful instruments in the endeavour to pass the Inflammable Liquids Bill, a measure which put very serious restrictions upon the sale of what is now, amongst certain classes, a staple source of light, and, in some industries, of heat.

The dangers to which the public are subjected through improperly storing this highly inflammable liquid, are, undoubtedly, of a sufficiently serious nature to warrant the exercise of fitting precautions. But it is questionable whether the advantages gained would outweigh the disadvantages imposed, and the halo of safety with which it would be supposed the public were to be surrounded, would have stood in danger of being ruthlessly dispelled by the ravages of another extensively used and fiery spirit, namely, alcohol.

An incident which took place last week has demonstrated that the storage of certain spirits, for the retailing of which as it is a special licence is required, is fraught with dangers which unfortunately in this instance proved fatal. The number of depôts existing where these inflammable spirits are kept is, we should think, far and away in excess of the number of places where petroleum is stored or sold, so that here apparently is another case which has equal claims to attention with petroleum in regard to legislative control.

Still, after all, it is an open question whether the British public would altogether appreciate such thoughtfulness on their behalf, when as in this particular case the matter resolves itself into the necessity of restricting the conditions under which "the wee drappy of the creatur" may be obtained by those who find themselves in need of stimulation; and this, owing to the ignition of some spirits in a hotel vault, resulting unfortunately in the death of the proprietor.

Alarmists have of late had manifold chances of working upon the feelings of the general public, but fortunately the nett outcome is, in the majority of instances, nil. The carriage of petroleum in bulk through the Suez Canal was in the earlier stages of its discussion threatened with opposition

from this source, as is also the extensive trade in apples, which for long enough has been carried on between this country and Canada.

The statement that American apples are not safe to use for eating purposes, owing to the use of Paris green for the destruction of codling moth, is one that has taken deep hold on the public mind.

Much has been said against the use of arsenical compounds for agricultural purposes, but in this particular instance experiments are being made which go to prove that the perturbation which has prevailed on this score has been unfounded. Although public dangers should always gain the attention which their importance demands, it is well that as a rule the attempts made to take advantage of public scares prove abortive, which after all is the termination naturally to be expected since *ex nihilo nihil fit*.

SOCIETY OF CHEMICAL INDUSTRY.

LIVERPOOL SECTION.

THE annual general meeting of this section was held at the University College on Wednesday, April 6th, Mr. A. Norman Tate, the vice-chairman, presiding Professor J. Campbell Brown exhibited a series of excellent models of metallurgical furnaces which had recently been acquired by the chemical department of the college from the funds placed at the disposal of the department by the Corporation. The chairman then called upon Mr. E Carey to open the discussion on the paper read at a previous meeting of the society by Mr. A. E. Fletcher on "Modern legislation in restraint of the emission of noxious vapours from manufacturing operations." After referring to the past legislation on the subject, Mr. Carey expressed himself as strongly of the opinion that any amendment to the Alkali Act should schedule the gases, and not the works, pointing out the anomalies that exist with the Act in its present form In regard to the limits to be assigned to the minimum quantities of noxious gases which it should be permitted for the various works to emit, Mr. Carey expressed himself in favour of adopting a best practical means clause of an elastic nature, rather than a numerical limit. After pointing out the important bearing of any amendments of the Alkali Acts on the industries with which the society was specially concerned, he moved the appointment of a committee to consider the question in conjunction with the parliamentary committee of the society.—This resolution was seconded by Mr. J. Gamble, who expressed his approval of the points put forward by Mr. Carey. Dr. Hurter dwelt especially on the desirability of employing a numerical limit in preference to a best practical means clause in regard to the emission of all noxious gases.—The discussion was continued by Messrs. Buchanan, Terry, and Rhodes, after which Mr. Fletcher replied to the various criticisms passed on the views he had expressed originally in his paper. —After some remarks from the Chairman, the meeting adopted the proposal of the appointment of a committee, the following gentlemen being nominated, with power to add to their number :—Colonel Gamble, Mr. A Sinclair, Mr. E. K. Muspratt, Mr J. Brock, Mr. J. H. Dennis, Dr Hurter, Mr. H. Gaskell, jun., Mr. D. M'Kechnie, Dr. Schack-Sommer, Mr W D. Hermann, Mr E. Bibby, Mr. H. Brunner, and Mr E. Carey The result of the annual election of officers was as follows :—Chairman, Mr. H. Brunner ; vice-chairman, Mr. E. Carey ; secretary, Dr. Charles A Kohn, B.Sc. ; treasurer, Mr. W. P. Thompson ; committee, Professor Campbell Brown, Mr. J. C. Gamble, Dr. Schack-Sommer, and Mr. A. Norman Tate.

LONDON SECTION.

At the last meeting of the London section it was announced that it had been definitely decided to hold the forthcoming annual general meeting of the Society in London, and it, therefore, behoved the section to endeavour to return the hospitality with which it had been received at various provincial centres.

DISCREPANCIES IN SPECIFIC GRAVITIES.

Dr. Alder Wright read a lengthy paper on "Specific Gravity Determination for Practical Purposes." He said that a very moderate degree of exactitude was often sufficient for the purpose in view, but that for special purposes a high degree of accuracy was requisite, and in such cases certain modifications of the appliances ordinarily used, and various tables of corrections, were of service. Strictly speaking it would be most convenient to express all values concerning the relative density of bodies on the absolute scale of "weight per c.c.," but in practice it was usual to compare the of a given volume of the substance with that of an equal vo water at the same temperature. Neglect to recognise differe expression of this sort frequently led to apparent discrepancies. if a sample of vegetable oil at 20° C. was found by one observer the sp. gr. 0·92475 referred to water at 4°, by another the sp. 0·92560 referred to water at 15·5° and by a third the sp. 0·92635 referred to water at 20°, it was impossible to say whether these results were strictly concordant (as a matter of fa were) or not. In using the sp. gr bottle, or as the author pref call it, the pyknometer, the co-efficient of the cubical expa glass could not be neglected in exact work. Similarly the di between the true value of the weights and their apparent valu became appreciable under certain conditions. Most forms of meter, including the Sprengel tube, had the disadvantage th temperature of the balance was above that at which the instrum filled, expansion was apt to take place whilst weighing, so liquid ran over, and if volatile, was partly lost. Two modi obviating these troubles were exhibited. Their difference f ordinary instrument consisted in their being provided with narrow neck on which was marked a millimetre scale, so that t to which the liquid rose was immaterial. With such precautio correct to two units in the fifth decimal place were obtainable.

THE WESTPHAL BALANCE AND HYDROMETERS.

Dr. Wright, while acknowledging the handiness of the W balance, disputed its claims to consideration as an accurate inst it was far better to use a simple plummet on an ordinary c balance. With regard to hydrometers they were comparatively save such as were prepared for special purposes, *e.g.*, alcohol An improvement in their indications could be effected by ab the ordinary graduations, and using a simple divided scale et the stem. The valuation of the readings of this scale was n floating the instrument in a liquid of such sp gr. at the s temperature, that nearly the whole of the graduations of the ste above the surface ; the reading thus obtained was taken as point of the hydrometer. A suitable weight was then attache top of the stem, and the level of the surface again read off If instrument was floated in a liquid the density of which w determined, the distance of the point, where the stem emerg the liquid from the zero point, was a measure of the densi second liquid compared with the first, and from its value th could be deduced in ordinary terms. In the discussion which f Mr. Howard jocularly likened those who still clung to such Twaddell or Beaumè to savages, who were content with ra the most elementary description. They were fellow creature true, but sadly in need of guidance and instruction. Several n seemed totally unable to realise that the correction used expansion of a sp. gr. bottle itself, was immediately derived cubical co-efficient of expansion of glass, and put the autho trouble of giving the usual text book explanation on their beha Tyrer, in summing up after Dr. Wright's reply, said that n razor was being applied to profits all round, it was more necess ever to avoid giving one's customers too much for their money, this purpose the accurate determination of sp. gr. was often in able.

Mr. Watson Smith read a note by Dr. Bauer on Artificia which is simply trinitrobutyltoluene, the raw material being from rosin spirit.

THE COMPOSITION OF ROSIN OIL.

Mr. F. H. Leeds also contributed a note on rosin oil. that rosin oil of the first distillation varies considerably in its c tion according to the design of the stills and the consequent gr less ease with which the rosin can volatilise unchanged during tion. The acidity of commercial samples varies from 15·2 molecular weight of the acids being assumed to be 302. The quoted above are those given by titrating an alcoholic solutio oil with caustic alkali. By boiling the oils with excess o potash, and titrating back, a further consumption of alkali take a difference varying from 1-9% being noted. Long exposur oil to the air produces little change in the percentage of acids f direct titration, but leads to a marked decrease in the ac portion that is only saponified by boiling with an excess o alkali. It further appears from the non-agreement of the vo and gravimetric determinations of saponifiable matter, that th cular equivalent for the acids quoted above, is not accurate.

MANCHESTER SECTION.

On Friday, April 8th, the Annual General Meeting of thi was held at the Victoria Hotel in the rooms of the C Club There was a large attendance. The chair was take after 7 p.m. by Ivan Levinstein, Esq., who, after the read passing of the minutes, opened the business of the evening

n of the Committee for the ensuing year. The result of the was as follows:—Dr. Bowman 25, Dr. Schunck 25, G. E. 24, Dr. Knecht 22, J. M. Irving 18. Mr. Heys then read a by Mr. F. Budenburg and himself, on "Gaseous Fluids under re."

authors said that an investigation of recent explosions revealed hat could be foreseen, and also many things which were un-table.

ing over such sources of explosion as those arising from bad al employed in the construction of the reservoirs and their , which can, of course, be remedied, and denouncing the fatal of users prefering what is cheap to what is good, the authors on to the consideration of those accidents arising from the use of ecessary adjunct to a compressed gas reservoir, the pressure

Owing to the enormous pressures at which gases are now the gas enters the guage with terrific force immediately the valve is , even with the smallest hole it is possible to drill. The air ed in the gauge and fittings is thus instantaneously compressed, great amount of heat is generated, which, combined with the al heat caused by the passage of the gas, is sufficient even at a e of eight atmospheres to reduce chips of wood to ashes, a fact was successfully shown by an experiment.

ral simple precautions were indicated by the adoption of which k of explosion may be greatly, if not entirely, minimised. The mportant of these were the complete avoidance of even a trace in any of the fittings, the insertion of a compact porous septum, sed of alternate layers of felt and copper gauze, in the passage gauge so as to prevent any sudden rush of gas, and the re-n as far as possible of all air spaces to which the gas has access. us evident that gauges which have been tested with oil, a usual e with some makers, should be carefully avoided for use with essed gases.

auge with a patent safety flap, or valve, was shown, being ed to avoid the shock caused by the unavoidable rapidity with the gases enter the gauge.

THE ANALYSIS OF SNOW.

J. Carter Bell then gave the results of some analyses of snow he had made.

was surprised to find in Dr. Angus Smith's book on Air and Rain, ntion of any analyses of snow. The large amount of chlorine in ıt three samples is, in the opinion of the author, due to the of spreading salt during the winter. The results obtained are led, the samples having been collected from the various places ned. The results are expressed in parts per 100,000.

	Free NH_3	Alb. NH_3	Cl	SO_3
ration-street	.085	·1	7·6	·34
nge Station	·15	·075	10·8	·37
hton Bridge	·26	·12	9·5	·26
hton Park.....	·02	·1	·7	·29
e Works	·05	·15	·8	·49
n-on-Cliff	·06	·1	·7	·33
Moor	·03	·1	·5	·29
College	·2	·14	1·7	·47
e a Chemical Works ..	·1	·05	·8	·18
sall Workhouse	·037	·1	·6	·32

ill be seen from these results that the atmosphere surrounding ical works does not contaminate falling snow to the extent that mosphere changed with the products of household chimneys

The chemical works in question were supposed to emit vapours offensive nature, since they were the works of Messrs. Levin-& Co., these results being part of the evidence prepared for the lants in the prosecution of this firm at the last Assize.

MANUFACTURE OF OXYGEN FROM AIR.

Bowman then introduced his paper on the "Manufacture of n on a Commercial Scale." He said he had been so busy, that I not been able to prepare a written paper, and therefore would on Dr. Fanta, the inventor of the process, to explain the pro-nd plant. This was done by the aid of large drawings, and ently constructed model apparatus, by which Dr. Fanta made oxygen by his process. The chemical principles in the process ewhat similar to the *Tessié du Motay* process, but there is a nce in the preparation of the compound with which the apparatus rged.

materials used are manganate of soda, and a little caustic soda, which steam and air are alternately passed. When the steam g through the retorts is no longer evolving oxygen, it passes over h the oxygen delivery pipe, and operates a valve which closes the passage to the holder. Again, the water from this condensed steam operates a simple piece of mechanism which opens and shuts the air and steam valves, so that the whole plant is automatic.

The reaction for the *Tessié du Motay* process the inventor gave as follows:—

(1) $MnO_2+2NaHO+O = Na_2MnO_4+H_2O$.

(2) $Na_2MnO_4+H_2O = 2\,NaHO+MnO_2+O$.

In this process, however, the steam passing first had a definite reaction which was at present only explained theoretically, though its action was undoubtedly established.

(1) $10\,Na_2MnO_4+NaHO+10\,H_2O = 21\,NaHO+5\,Mn_2O_3+O_{15}$.

(2) $21\,NaHO+5\,Mn_2O_3+15\,(N_4+O\text{air}) = 10\,Na_2MnO_4+NaHO+10H_2O+60\,N$.

While the experiment was being conducted, Mr. Watson Smith explained that the experiment being performed had been made in his laboratory a few days before in a precisely similar manner, and as he had bought the chemicals and prepared the manganate of soda in accordance with the inventor's directions he could speak to the experiment being a bona-fide one. The contents of the retorts lasted for a very long time, virtually for years, and when found to have deteriorated could be easily resuscitated.

Dr. Bowman pointed out the advantage which would accrue from obtaining cheap oxygen, and they could make it he said at from 1s. 2d. to 2s. per 1,000 cubic feet, whilst the plant was much cheaper than that required to work the existing processes. Moreover, a temperature of about 600° F was. sufficient to evolve the oxygen, and therefore there was very little wear and tear to the plant. The gas they obtained had been found by experiment to contain 95% of oxygen.

The whole plant and process was a typical instance of what may be achieved by chemical engineering in its strictest and legitimate sense. Mr. J. C. Bell also read a paper by Mr. S. Rothwell, while the preparation of the oxygen gas was being carried on.

THE TENDERING OF COTTON BY FROST.

This communication bore upon the "Action of Frost on Cotton." The author found that cotton was not made tender by frost, as was generally supposed. It was true that when frozen the fibres were easily snapped, but on subsequent thawing it would be seen no damage had been done to the fibres through being frozen. To prove this question, pieces of madder-bleached cloth, one of good and one of bad quality, were dipped in water, frozen, and this repeated so that the cloth was frozen about 16 hours. After allowing the cloth to dry, both qualities were found on testing to be as strong as the original cloth. In the case of made up cotton goods where the fibres were twisted there might be a certain amount of mechanical weakening, but this point remained to be proved.

There was a short discussion on the first and third papers, when after the passing of the usual votes of thanks the meeting, which had been most successful, terminated.

THE CHICAGO EXHIBITION.

A MEETING of manufacturers, merchants, and others interested in this exhibition, was held at the Manchester Town Hall, on Friday, 8th inst., with a view of affording manufacturers information upon the conditions under which exhibits might be made and space obtained.

The Mayor (Mr. Alderman Leech) presiding, stated that the Society of Arts had been appointed commissioners for the exhibition on behalf of the Government, and introduced Sir Douglas Galton, Sir Cunliffe Owen, and Sir Henry Trueman Wood, as the representatives of the commissioners, who had also brought with them Mr. M'Cormick the commissioner from Chicago, to lay this matter before the manufacturers and merchants of the district.

Sir Douglas Galton said the Government had ultimately voted £60,000 for the purpose of representing England at Chicago, this grant enabling them to offer exhibitors space free of cost. He pointed out that other countries were making extensive preparations to be fully represented, and it was desirable that the manufacturers of the Manchester district shouldbe also to the fore.

Mr. M'Cormick then pointed out that the United States were the best customers England had, despite the M'Kinley tariff. Moreover, Chicago was in the centre of a large district where there had been a great deal of opposition to the tariff. By sending to the exhibition, manufacturers at home would be able to show the merchants of the Great West how much cheaper they could sell their goods without the tariff, as exhibitors would be allowed to mark on their goods the cost to the buyer at Chicago, with the tariff and without the tariff, thus demonstrating what benefits the abolition of the tariff would carry with it.

Sir Philip Cunliffe Owen said that the Chicago World's Fair would be different to the ordinary run of exhibitions, as it would be essentially a business exhibition, and was intended for business purposes and not pleasure as was the case with the Paris Exhibition. As to the objection that by sending our goods we only enabled the Americans to copy from us, he said, we and the Americans were brothers, and why should we not steal from each other. (Laughter.) He thought that in the face of the efforts that France and Germany are making the manufacturers of Manchester would never cease to regret it if they did not go handsomely into this exhibition.

Sir H. Trueman Wood said that already much of the available space had been taken, and as yet barely any of the industries of Manchester were represented, he hoped those who wanted space would apply before it was too late.

Mr. Alderman Bailey then spoke strongly deprecating the idea of exhibiting machinery at Chicago. If anybody in the United States desired to copy our machines let them come over here and do it. (Applause).

Mr. M'Cormick, in replying, pointed out that English manufacturers would best please the Americans by stopping away, especially in the case of the iron industry, in which they were developing an export trade. In answer to a question, he also stated that an article patented in England and not in America, would during the exhibition be protected as if it were patented in both countries, and also that goods for the exhibition would be entered duty free.

The only point raised practically was whether it was advisable to send machinery to Chicago or not. Nothing was said about other industries, more particularly the chemical and allied industries, which are centred in the Manchester district. The information given, however, will no doubt be of interest to those who have any intentions of exhibiting, and as was pointed out by Mr. G. Helm, although the opinion expressed by Mr. Bailey did exist to a large extent in Manchester, there was also a broader spirit, which instead of evincing any jealousy, rather courted competition, believing that mutual benefits would result. The Mayor of Oldham (Mr. Alderman Emmott) in moving a vote of thanks to Mr. M'Cormick, said, that as makers of machinery in England often complained of their goods not being known abroad, he thought they would appreciate the opportunities afforded them by the Chicago Exhibition when looked at from an advertising point of view. After passing a vote of thanks to the Royal Commissioners, the meeting terminated.

RECENT CUSTOMS DECISIONS.

PAINT CONTAINING ZINC (LITHOPHONE)—PAINTS AND COLOURS.

IN the matter of the protests of Gabriel and Schall against the decision of the collector of customs at New York as to the rate and amount of duties chargeable on certain lithophone, imported per Movais Bay, April 24, 1891, and California, May 18, 1891, the following is the opinion by General Appraiser Wilkinson.

The merchandise is a dry white powder called "lithophone." It is composed of sulphate of barytes about 70 per cent., and sulphide of zinc about 30 per cent. It was assessed for duty at 1½ cents per pound under paragraph 60, N.T., as a white paint containing zinc, and is claimed by the appellants to be dutiable at 25 per cent., under paragraph 61, as a colour not specially provided for.

Paragraph 60 reads: "Zinc, oxide of, *and white paint containing zinc, but not containing lead*, dry, one and one-fourth cents per pound; ground in oil, one and three-fourths cents per pound." The words in italics did not appear in the bill as it originally passed the House and Senate, but were inserted by the conference committee.

The line between colours and paints is not absolutely clear. Webster uses the words colours, paints, and pigments as synonyms, while the Century Dictionary defines paint as a "substance used in painting, composed of a dry colouring material intimately mixed with a liquid vehicle." We do not find in the tariff a well defined distinction between colours and paints; but in the trade there is a pronounced difference in the meaning of the two words. A leading domestic manufacturer of, and dealer in, colours and paints describes paint as "a pigment to which has been added a flowing vehicle, such as water, turpentine, varnish, or chiefly oil." Other experts in the trade indorse this definition, and say that "dry paint" is a misnomer, as there is no such thing.

We are of the opinion that commercial designation must be regarded as a controlling factor in the classification of the merchandise in question, and we therefore find that dry lithophone is not a paint, but a colour.

In accordance with this finding, the claim of the importer is hereby sustained.

TALC—FRENCH CHALK.

In the matter of the protest of J. S. Kirk and Co., aga decision of the collector of customs at Chicago, as to the r amount of duties chargeable on certain talc (French chalk), i per Arcadia, July 9th, 1891, the following is the opinion by Appraiser Wilkinson.

The merchandise is a ground mineral invoiced as talc. assessed for duty as French chalk at 1 cent. per pound, und graph 16, N. T., and is claimed by the appellants to be dutia mineral advanced in condition at 20 per cent., under section October 1st, 1890.

A sample of the article was submitted to the chemist of the States laboratory at this port, who reports as follows:—

Analysis.—Water, 9·40 per cent.; silica, 47·32 per cent.; and oxide of iron, 3·53 per cent.; lime, 28·37%; magnesia, total, 100.

The sample constitutes a ground mineral substance consi hydrous silicate of lime and magnesia, and, in my opinion, so resembles French chalk, and might be used as such for some p French chalk usually consists of talc or hydrous silicate of magn

The constituents of steatite, talc, soapstone, or French c given in the American Encyclopedia, are:—Silica, 62·14; m 32·92; water, 4·94.

We find upon the analysis of the United States chemist (1) merchandise in question is not French chalk.

Classification as French chalk under the similitude clause rer be considered. In the authorities consulted, Ure's Dictiona British Encyclopedia, the Century Dictionary and other s works, there is no mention made of the use of French chall manufacture of soap. In the present case the appellants tes the mineral is for use in the manufacture of soap; nor have information as to what (if any) purpose this mineral may be French chalk is.

We find (2) that the merchandise in question is not similar to chalk in material, quality, texture, or the use to which it applied.

We hold that the article is a non-enumerated article, manu in part, and the claim of the appellants that it is dutiable a cent., under section 4, is hereby sustained.

PETROLEUM AS A FUEL.

THE trials recently conducted at Spezzia by Admiral de and a special Commission are of far greater value than thei object would seem to imply. Our knowledge of the extent of c fields and of the enormous annual consumption of coal justi belief that within no very distant period that fuel will bec obtainable except at a price that will place it beyond the reacl ordinary manufacturer. Mr. Price Williams has shown by cal that the workable resources at present known to exist will be ex within a comparatively few years if the present annual consum nearly 80 million tons be maintained. The newly opened-up c in Kent were not taken into consideration when the calculat made, but it is improbable that these thin seams will material the accuracy of the deduction. The anticipated exhaustion of supplies does not, however, excite the apprehension that it di years ago. Coal had its origin in the petrefaction of submerged and by the decomposition of marine plants another useful fuel h given to us, namely, petroleum. It will be as well to direct ot tion to the differences in the chemical composition and the gravities of these two fuels, coal and petroleum. The averag position of 28 samples of Lancashire coal is: Carbon, 78; hy 5·28; oxygen, 9·5; while that of petroleum refuse is: Carbo hydrogen, 11·7: oxygen, 1·2. The vastness of the oilfields discovered in various parts of North and South America, Russia and Persia makes the liquid hydro-carbon petroleum, with calorific power, a formidable competitor with coal, and it m mately take the place of the latter in manufacturing processes domestic use. Those who had knowledge of the results of the ments made as to the efficiency of petroleum as fuel for locomo the Grazi and Tsaritsin Railway, in South-East Russia, in 18 the Buenos Ayres and Rosario Railways in 1887, were not sur the satisfactory report of the trials made by Admiral de Samb these experiments petroleum refuse (*astaki*) only was used, its power being once and a half greater than that of coal. The pe oil, which is obtained by a process of distillation, has a calorifi nearly twice that of petroleum refuse, and therefore about tw half times that of coal. But the value of a fuel to the man depends upon its evaporative power, and in this respect petro as of course its heating power indicates, superior to coal.

e pressure of eight and a half atmospheres the theoretical itive power of good English coal is 12·16lb. of water per pound , while at the same pressure petroleum refuse has a higher itive value of about 33 per cent.

n, in the case of coal no less than 40 per cent. of the heating theoretically considered, is unavoidably lost through imperfect tion, while with petroleum 75 per cent. of the theoretical itive power is effective. As Mr. Thomas Urquhart has clearly trated, the practical evaporative value of petroleum as com- with that of anthracite coal is, weight for weight, from 65 per cent. higher. As a fuel for steamships petroleum has led advantage in the matter of storage room, eight cubic s per ton being necessary: but the danger of carrying large ies of such an inflammable article more than counterbalances vantage gained in storage. The relative cost of these fuels resent in England greatly in favour of coal, but it may fidently predicted that with the improvements in the means duction inevitably resulting from an increase in the demand um will as regards price, as it is in other respects, be a ful rival of coal. In Russia, where some of the experiments I lluded to were made, the price of the petroleum refuse was hat of coal, being 21s. per ton, while coal was 27s. 3d. per ton. as 12,639 lb. of anthracite coal were consumed in running 194 vith a gross load of 400 tons, only 7,223 lb. of petroleum refuse und necessary to run the same distance with the same load. ost was therefore a little more than 4d. per mile when the um refuse was used, and 9½d. fully per mile when coal was Strikes, short weight, and the numerous other eccentric motions wheel of coal commerce are hastening on the adoption of other ices to work out our purposes in the various manufactures and ply our domestic wants.

THE OUTPUT OF GERMAN MINES.

WITH respect to the production of the mines, salt works, and foundries in the German Empire and in Luxemberg, the "Bergwerk- und Hüttenmännische Zeitung" has published the following details. The different works the following produce to show for the year 1891 up till March, —

	Amount in Tons. 1891.	Amount in Tons. 1890.	Value in Thousand Mks. 1891.	Value in Thousand Mks. 1890.
Mining Products.				
al	73,640,618 ..	70,231,841 ..	589,357 ..	537,973
e	20,554,885 ..	19,051,322 ..	54,112 ..	49,765
oils ..	15,315 ..	15,226 ..	1,194 ..	1,242
salt	666,802 ..	557,060 ..	2,879 ..	2,473
e	472,256 ..	361,827 ..	6,867 ..	5,200
kali salts ..	898,993 ..	913,030 ..	11,086 ..	11,305
re	10,657,502 ..	11,406,052 ..	39,408 ..	67,827
re	793,442 ..	759,437 ..	24,951 ..	23,416
ore	159,084 ..	168,234 ..	16,655 ..	18,098
r ore ..	587,409 ..	596,100 ..	20,865 ..	20,167
& gold ore ..	23,832 ..	21,360 ..	4,625 ..	4,584
Salts.				
ion salt ..	486,657 ..	476,027 ..	13,057 ..	12,874
im chloride ..	120,512 ..	137,005 ..	17,129 ..	17,735
im sulphate	37,674 ..	31,126 .	6,058 ..	4,932
Foundry Products.				
on	4,524,816 ..	4,658,451 ..	227,360 ..	267,580
.. ..	122,155 ..	122,218 ..	54,732 ..	54,564
.. ..	80,021 ..	86,486 ..	19,520 ..	21,813
er	24,301 ..	24,455 ..	28,045 ..	28,918
.. ..	382 ..	350 ..	50,143 ..	48,692
.. ..	3,076 ..	1,854 ..	8,568 ..	5,162
.. ..	2,874 ..	638 ..	524 ..	123
ic	1,987 ..	2,167 ..	555 ..	589
ur	433,086 ..	424,251 ..	14,635 ..	14,069

TIFICIAL MANURES, &c. (ADULTERATION) BILL.

REPORT of the committee says that the Hon. W. H. Cross, M.P., has informed the Liverpool Chamber of Commerce that resident of the Board of Agriculture is not preparing a Bill in itution for that again introduced this session by Mr. Channing, hat the Government will oppose Mr. Channing's Bill as it now s. The Board of Agriculture has, however, appointed a depart- al committee, of which Mr. Channing is a member, to consider ner any, and what legislative provisions, are necessary to prevent dulteration of manures, feeding stuffs, &c.

AMERICAN OIL OF TURPENTINE.

By J. H. Long.

AS is well known, different kinds of turpentine oil differ from each other in marked degree in their action on polarized light. While the French oil is laevo-rotatory, the American and Russian oils are dextro-rotatory. The degree of rotation is not constant, and the greatest variations seem to be found in the American oil. The explanations offered for these deficiences have not been wholly satisfactory, and a few years ago I began the collection of specimens for examination, with the hope of throwing further light on the subject.

While the polariscopic tests have not shown all that I looked for, they have given some definite results of value, and will be explained at length later. In collecting samples for study, the question of purity frequently presented itself, and I found it necessary to look over the various tests proposed. In this way several practical points were brought out, which I believe are worth putting on record. I will also add several details regarding the production of turpentine, as some of the statements in the text-books are misleading on this point. For much of this information I am indebted to Mr. E. B. Martin, of Louisville, Ky., who is probably the best American authority on the practical parts of the subject.

THE DISTILLATION OF TURPENTINE.

By far the largest proportion of our American turpentine is obtained from what is known as the "longleaf" yellow pine (*Pinus Australis*). In certain localities the "loblolly" or "old-field" pine (*P. taeda*) is abundant, but the oil obtained from it is but a small part of the whole. The same may be said of the "pitch" pine (*P. rigida*) and the "swamp" pine or Cuban pine (*P. Cubensis*). This Cuban pine, called also "slash pine," is said to produce a good yield and high grade of turpentine, but the trees are not abundant. For the purpose of collecting the crude turpentine or "gum," pockets or "boxes," capable of holding about one-half gallon, are cut in the tree a few feet from the ground. A large tree may have three or four of these boxes. They are cut during the winter months, and in the spring and early summer the exuded oleo-resin collects in them. As often as necessary, the contents of the boxes are dipped out and taken to the stills in barrels. To facilitate the collection of the "gum" in the boxes, grooves called "streaks" are cut in the tree above each box. The exudation collects in these streaks and gradually flows down into the boxes. The boxes cut in new trees are called "virgin" boxes, and the "gum" found in them, which is white and of the consistence of honey, is called "virgin dip." The "gum" collected in the boxes in the following years is called second-year dip, third-year dip, and so on. As the gum flows down the streaks to the boxes, a part of it, from exposure to the air and sun, becomes hard and adheres to the tree. In the autumn this is removed by a hoe-like tool furnished with a long handle, and is called first-year or virgin "scrape," second-year "scrape," third-year "scrape," and so on. After four or five years the quantity of dip produced is too small for profitable working, and the tree is abandoned. In some localities the product of fresh boxes is termed virgin dip, as before, but that collected in the following is called first-year instead of second-year dip. The dip of the virgin boxes yields a larger quantity and better quality of turpentine than that of the following years.

The process of distillation is very simple, and is carried out in copper stills holding from 8 to 50 barrels of the gum. The still most commonly used holds about 20 barrels. At one time it was customary to distil dry, but now water is always added, so that the oil may pass over in a current of steam. Several ends are accomplished by this improved method of distillation. The temperature can be more readily controlled, and decomposition products (rosin spirits, etc.) are largely avoided. The vapour leaving the still is condensed in a worm, surrounded by cold water, and flows into a receiving tank, where the oil soon collects on the surface, and is drawn off from time to time. It is usually sent into commerce without further purification, although it holds a slight amount of water in solution.

A barrel of "gum," as taken to the still, weighs about 280 pounds (127 kilos.), and yields from 7 to 9 gallons (26·5 to 34·1 litres) of the oil. The weight of rosin left in the still is about four times as great as that of the oil obtained.

The American production of turpentine is about 300,000 barrels per annum, of which over one-half is exported, chiefly from Savannah and Wilmington. Small shipments are made from Charleston, New Orleans, and Mobile.

ADULTERATION OF TURPENTINE.

Turpentine, as sold in quantity, is not largely adulterated at the present time, although the reverse is generally supposed to be the case. That sophistication is not more commonly practised, is mainly due to the watchfulness of a few large dealers, who expose a fraud as soon as discovered. Among the liquids which have been mixed with oil o turpentine, in the way of adulteration, the light petroleum product

hold the first place. These may be added to the still with the "gum," as is done in the case of a certain "patent" oil made in small amount in several places, or they may be added to the oil in the tanks or barrels. A petty form of adulteration is sometimes practised in this manner: A few gallons of oil are withdrawn from a barrel through the bunghole, and the loss is made up by adding benzine. The result is known as a "bunghole mixture."

Another adulterant, but one rarely met with in America, is rosin spirit, a light volatile liquid formed in the dry distillation of rosin. It is not produced in the United States in quantity sufficient to give it importance as an adulterant. Cotton-seed oil has also been suggested as an adulterant, but if used at all, it must be in the manufacture of cheap paints and varnishes. While adulteration on the large scale is rare, it appears to be more common in the product sold by small retail dealers. The various sophistications can be detected by the following tests, which I have confirmed by recent experiments.

1. *Specific Gravity.*—The specific gravity of pure American turpentine varies within narrow limits, according to Allen (*Com. Org. Anal.* 2, 437), between ·864 and ·870. My own tests on thirteen samples distilled from fresh gum in the laboratory showed results varying between ·8622 and ·8655, water at 15 degrees being taken as unity. With pure commercial samples, I found the density to vary in a large number of cases between ·8656 and ·8748. The results here run higher, probably because of the presence of oxidation products due to atmospheric action.

The petroleum products which could be used in practice for the sophistication of turpentine have all a density much lower than this, as shown by the following table containing results of tests of standard American grades. The specific gravities were taken at a temperature of 15 degrees C., and refer to water at same temperature as unity.

Gasoline,	88 degrees B.....	sp. gr.	·6508
,,	74 ,, ,, ...	,,	·7001
Benzine,	63 ,, ,, ...	,,	·7306
"Standard White,"	110 ,, fire test	,,	·7999
"Water White,"	150 ,, ,, ...	,,	·7918
"Head Light,"	175 ,, ,, ...	,,	·7952
Mineral Seal		,,	·8293
Paraffin Oil.....		,,	·8906

A mixture of 95 volumes of a turpentine, having a density of ·8680, with 5 volumes of each one of these oils, gave results as follows:—

With 5 vols	Gasoline,	88 degrees B.,	sp. gr.,	·8568
,, ,,	,,	74 ,, ,,	,,	·8595
,, ,,	Benzine,	63 ,, ,,	,,	·8606
,, ,,	"Standard White,"	110,, fire test	,,	·8637
,, ,,	"Water White,"	150 ,, ,,	,,	·8632
,, ,,	"Head Light,"	175 ,, ,,	,,	·8638
,, ,,	Mineral Seal,		,,	·8656
,, ,,	Paraffin Oil,		,,	·8688

With mixtures like the above, it is evident that 5% of gasoline 88 degrees, gasoline 74 degrees, and benzine 63 degrees, is clearly indicated by the specific gravity test. Using the same turpentine, an admixture of petroleum products similar to "Standard White," "Water White," and "Head Light," could be detected if present, to the extent of 10%.

With a heavy grade of turpentine, the detection would be doubtful. However, an adulteration as great as 20% would be indicated even with a turpentine having a density of ·875. For the detection of ordinary rosin spirit the specific gravity test is not much use, some grades having a density higher, and some lower, than turpentine. Rosin oil, however, is heavier than turpentine. Fatty oils can readily be detected by this test.

(To be continued.)

PURIFYING THE AIR OF UNDERGROUND RAILWAYS.

MR. CHRISTOPHER ANDERSON, of Leeds, has recently invented an apparatus for extracting the foul air and products of combustion from underground railways. This invention consists in laying a rectangular tube between the rails, the tube having valves opening downwards at intervals on its top side. This tube or flue is connected with an exhausting apparatus, and underneath the locomotive is fitted a slider, which is in connection by a down chimney with the smoke box. As the locomotive passes along, the slider presses open the valves in succession, and the products of combustion are drawn into the tube by the exhaust fan at a station, and delivered into a chimney and so into the air. There is an arrangement by which the gases and products of combustion can be delivered into the air through the ordinary funnel when the train is running in open cutting, but while in tunnel the down chimney is used. The engine has, in effect, two chimneys—namely, the ordinary one, and one leading downwards to the slider. By permission of Sir Edward Watkin a half-mile length of tubing on Mr. Anderson's system was laid down last autumn on the Metropolitan Railway at Neasden in order to test its working. This installation was inspected recently by a large number of engineers, railway managers, and members of the various engineering and technical societies, among the visitors being Sir Douglas Galton, General Hutchinson, and other authorities. A number of runs were made with one of the Metropolitan Railway Company's locomotives which has been fitted with a slider. With the exhausting machinery running, directly the locomotive came over the tube the slider opened the valve and the products of combustion were drawn off, and were soon seen issuing from the chimney of the exhausting station half a mile away. The result was the same whether the engine was standing or travelling at its ordinary speed. In some runs exceedingly smoky coal was used in order to thoroughly test the system, and the smoke from it was soon seen issuing in dense black volumes from the exhausting station chimney. It was the expressed opinion of those present that the efficiency of the system as a means of preventing the pollution of the atmosphere or underground railways was placed beyond question.

PETROLEUM EXPORTS FROM U.S.A.

S. G. BROCK, Chief of the Bureau of Statistics, submits the following statement of the exports of mineral oils from the United States for the month of February, 1892:—

CRUDE PETROLEUM.

	Gallons.	Dollars.
Total for February, 1892	7,848,836	345,558
Total for February, 1891	4,267,289	307,978
Total for 7 months ending Jan. 29, 1892.	76,643,064	3,936,160
Total for 8 months ending Feb. 28, 1891	67,008·490	4,411,444

NAPHTHAS.

Total for February, 1892	1,739,363	114,553
Total for February, 1891	944,800	70,442
Total for 8 months ending Feb. 29, 1892	9,916,889	715,981
Total for 8 months ending Feb. 28, 1891	9,758,360	798,629

ILLUMINATING OILS.

Total for February, 1892	40,471,995	2,340,347
Total for February, 1891	33,323,242	2,388,578
Total for 8 months ending Feb. 29, 1892	369,993,625	22,412,318
Total for 8 months ending Feb. 28, 1891	400,270,768	28,050,162

LUBRICATING OILS.

Total for February, 1892	2,770,642	414,898
Total for February, 1891	2,736,500	388,348
Total for 8 months ending Feb. 29, 1892	22,836,102	3,426,246
Total for 8 months ending Feb. 28, 1891	22,488,322	3,171,219

RESIDUUM.

Total for February, 1892	22,932	2,222
Total for February, 1891	52,836	3,679
Total for 8 months ending Feb. 29, 1892	303,870	24,891
Total for 8 months ending Feb. 28, 1891	1,111,414	52,062

TOTAL EXPORTS.

Total for February, 1892	52,853,768	3,217,578
Total for February, 1891	41,324,667	3,159,025
Total for 8 months ending Feb. 29, 1892	479,693,550	30,515,390
Total for 8 months ending Feb. 28, 1891	500,537,354	36,483,516

THE PORTLAND CEMENT TRADE OF THE WORLD.

MR. GIRON recently read before the Engineers' Club at Philadelphia, a paper on the trade of the world in Portland cement, in the course of which he said that the present annual production in Europe amounts to over 20,000,000 barrels, and its commercial value to over 36,000,000 dols. The first factory was established at Northfleet, on the Thames. The process was so crude that in 1850 only four factories were in operation. In England there are now over 8,300,000 barrels made each year. The process is much the same as it was 20 years ago. The raw materials are chalk and clay, both very pure, and although inferior processes are employed they make a satisfactory cement. A few years ago the entire product of the kilns was put on the market, but the fineness of the Continental cements led English makers to improve their processes, although even now English cement is not, as a rule, as firm as Geneva or French

The manufacture was first introduced into Germany in 1852. re are 60 large works, having the same annual production as The raw materials are of exceedingly unfavourable character, nanufacturers have made a serious study of the properties and ortland cement, and now know exactly what rules to follow le their operations, and the consumer can depend on the pro- red him. The association of manufacturers has had much to the immense development of the industry in Germany. In ie industry grew slowly, the total production in 1880 hardly 750,000 barrels a year; now it is 1,800,000 barrels. The the Company of French Cements at Boulogne form the Portland cement factory in the world, turning out about barrels a year. In Russia the first works were established in d there are now eight factories producing 900,000 barrels a Belgium there are four works producing 800,000 barrels. he Portland cement industry does not really exist, although a ind of natural Portland is made. In Denmark and Norway den there are ten factories making about 800,000 barrels. cement was imported into the United States as early as 1868. the amount imported was 370,406 barrels, and last year it 3,000,000 barrels. Little effort has been made to develop facture there. The materials for manufacture are as difficult as in Germany, and the processes are similar. The process about eight days and demands great care to produce a uniform The cost of the system is too great to make it successful in The process used in the Portland cement works at Coplay ylvania has entirely revolutionized the science of cement At that factory the raw compound is burnt in a powdered while travelling in an inclined rotary furnace in an intensely leum flame, and a few hours is sufficient to finish the process. ent is guaranteed to stand 400lb. in seven days, 500lb in a nd 600lb. in three months, and to leave no more than 10 per due on a No. 80 sieve.

Our Book Shelf.

A Book of Dyes. Leopold Cassella and Co, Frankfort à

m have recently issued a pattern book of samples dyed with nerous specialities. It contains upwards of one hundred and imens; including their well-known diamine yellow, gold, d brown, and various combinations of the colours. The of the shades are pretty and of an even tint. Each pattern rt description giving the quantity of the dyestuff employed nethod of dyeing, along with any remarks upon the treatment casion may necessitate.

st the most successful and pleasing colours may be mentioned rs resulting from the use of thioflavine S and diamine blue arying proportions, also the chocolate browns obtained by diamine fast red and diamine brown V in conjunction with r, equal proportions producing an excellent soft and warm- wn.

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of Receipts. (Fifth Series), 432 pp.. E. and F. N. London, 1892.

ell-known series has for a long time enjoyed the appreciation ly amateurs, but of all those engaged in handicrafts. Owing wth of technical education it was thought advisable to issue ies of workshop receipts which should contain information be useful to those who have availed themselves of the improve- hich science has placed at their disposal. The treatment of us subjects which include distilling, evaporating, fireproofing, ofing, cooling, desiccating, glass manipulating, and many other onnected with the construction and repairing of scientific s is of a more exhaustive nature than in the earlier series, nders this work much more useful to the practical man. Some uctive hints will be gathered from the section devoted to y appliances, upon which subject further information will be der Desiccating, which includes an excellent description of ir-bath for constant temperatures and under Distilling, which the distillation of mercury under reduced pressure.

e pleased to find that various articles from the columns of *nical Trade Journal* have been put to further use in this instance of which will be found under Evaporation.

oofing, in addition to the number of paints, washes and stuffs e described for accomplishing the curtailment of the risks e liability of fires to extend entails, also includes an account of suitable extinguishing apparatus which have been patented cent years; a detailed account being given of the Grinnell sprinklers.

Under Inks there is one point of special interest, as instancing the results of applying science to the utilization of waste products, and that is the patent process of C. T. Bastand for utilizing cotton waste. This waste being saturated with oil and fat, if stored in large quantities, is a source of danger, being liable to spontaneous combustion. Mr. Bastand, however, recovers the oil and fat by extraction with benzol, carbon bisulphide, or any other suitable agent, and burns the cotton waste into carbon black for the manufacture of printer's ink.

Electric batteries are described at some length, most of the recent types being referred to. Motors and their construction is also a very interesting section, containing much information upon electrical apparatus in general.

Metal work of all kinds is described, including Smith's work, Japanese, and other kinds of fancy metal work.

The short article on the transport of liquid carbon dioxide and of acids will be found interesting, containing a description of Fleischer's safety crate and the Marple carboy protector.

Stoneware pumps are also described in connection with the transport of corrosive fluids, Doulton's well-known pump being mentioned. Syphons, which also come under this heading, are fully described, and one or two useful hints may be gathered by those having occasion to use these simple but handy appliances. Stereotyping, netting, knots, and many other matters of a somewhat heterogeneous character are also included in this book, towards the end of which will be found a description of how to make a good barometer, and also of a useful instrument called a dendrometer for ascertaining the heights of various objects.

This book constitutes a most useful addition to the library of mechanics, amateurs, and those engaged in scientific businesses, and is perhaps the most generally useful number of this series, an expression which sufficiently indicates that it is a work of high merit, being of a thoroughly practical nature.

The Yearbook of Science. By T. G. Bonney, D.Sc., F.R.S.; 462 pp. With index to subjects and authors quoted. London: Cassell & Co, Ltd., 1892

The object of this work is to afford to those engaged in research and other work a means of obtaining an acquaintance with the most important contributions to the scientific literature of the past year. The subjects treated include physics, chemistry, geology, and mineralogy, animal and botanical biology.

Some of the most interesting papers, amongst the many of which a synopsis is given in this section, are those of Miculesco and D'Arsonval on the "Mechanical Equivalent of Heat," Lippman's paper on "Colour Photography," and other papers on the "Electro-Chemical Action of Light." Under electricity pure and simple, the recent experiments of Nikola Tesla are somewhat fully treated.

The subject of solution upon which so much has been written of late naturally covers a good deal of ground in physical chemistry, while a short account is given of Crooke's communication upon electric evaporation.

A lot of useful information will be found under Fog, in the section devoted to meteorology, mention being made of the Manchester Air Analyses Committee and their results.

The inorganic chemistry section covers a most extensive area, the more important references being to Moissan's work on the isolation of fluorine, the carbonyl derivatives of nickel and iron, the discovery of persulphates by Marshall, and the reduction of metallic oxides by the aid of magnesium, and an account of the metallic compounds of hydrogen obtained in the execution of the former experiments.

The contributions upon "Flames, and their Various Phenomena," are also particularly interesting.

Under Organic Chemistry, owing to the extensive and heterogeneous nature of the majority of papers upon this subject, it has only been possible to select those which are of general interest, and being treated from a non-special standpoint, this section may be considered by some rather scanty; but remembering the professed nature of this section, we think the most important and generally useful papers will be found to have been chronicled. The remaining portion of the book is as complete as the first two sections, the geological and palæontological portions being very interesting.

This work constitutes a most useful addition to Messrs. Cassell's Yearbook Series, and should meet with a large demand from all those engaged in practical science, as a means of keeping *au courant* with the scientific literature of the day—a task which it is almost impossible for those employed in working out the applications of science to perform, unless assisted by a work of this character.

Fire-Proof Paint.—A company has recently been established at Shreveport, La., U.S.A., for the manufacture of a water and fire-proof cement roof paint.

Reports of Companies.

WINDING-UP NOTICE.

The Dee Oil Company, Limited.—A public inquiry ordered by Mr. Justice North, was to have taken place on Wednesday, last week, before Mr. Registrar Hope with reference to the circumstances attendant on the promotion and failure of this company; but the Assistant Official Receiver (Mr. Wheeler) announced that he had been unable to obtain access to the books containing particulars of the trading of the company between the years 1878-87, and consequently the examination of directors and others could not be proceeded with. Mr. Registrar Hope intimated his intention to report to Mr. Justice North the reason why the inquiry could not go on, and he adjourned the proceedings *sine die*.

Standard Oil Company.—The celebrated Standard Oil Company, the largest corporation of its kind, is to be dissolved. About two years ago the capital was increased by £4,000,000., which at that time was the amount of accumulated profits, and this extra capital was distributed among the certificate holders. There are now £500,000 to be divided, and the sum will be divided in the same way. Each holder will receive a certificate stating that he is entitled to so many shares in each of the companies which constituted the trust. On such a certificate can be obtained at any time the shares to which the holder is entitled, but would be of greater market value than the several small lots of shares which it represents. It is stated that the number of companies into which the Standard is to be divided will not exceed twelve, all of which will be closely allied, and each one strong enough to monopolise trade in its own field. At the Standard Oil Building will be the transfer office, and also a dividend clerk, who will pay in one cheque the total of all the dividends to which each certificate is entitled.

NOTICE.

LONDON AGENTS.

Booksellers and Newsagents may now obtain supplies of
THE CHEMICAL TRADE JOURNAL
From
MR. JOHN HEYWOOD,
1, Amen Corner,
Paternoster Row, E.C.,
On usual trade terms.

Correspondence.

*** *We do not hold ourselves responsible for the opinions expressed by our correspondents.*

ANSWERS TO CORRESPONDENTS.

H. M. and Co.—Your letter duly received, we have done as you requested and hope you may ascertain what you want to know.

H. S.—They have been sent on to you by post.

E. M. Co. (New York).—Many thanks for your courteous letter. We shall be pleased to meet you in the matter.

A. D. (Amiens).—We have given the matter our careful consideration, but do not see how we can very well do so, at present at any rate.

I. H.—We are awaiting your reply.

H. B. and Co.—They are out of print, notification to this effect was given in the Journal about the date of that particular issue.

Trade Notes.

To Makers of Packing Machines.—Makers of machinery for measuring and packing powders ready for sale, are requested to communicate with the office of *Chemical Trade Journal*, in answer to an inquiry for a machine for blocking soap powders, etc., into ¼lb. packets.

Manufacturing Explosives.—At the Manchester Police Court, last week, a man was fined £10. for making toy percussion caps without a licence. The manufacture was carried on in some farm outhouses, where 258 gross boxes of caps were found stored.

Smoke Prosecutions.—On Wednesday last Messrs. Buckley and Brennand, bleachers, and Messrs. Lightbown and Co., paper makers, were both fined for emitting black smoke. The boilers in each case were fitted with smoke consuming apparatus, but were negligently worked.

The London Gas Examiner.—Professor Vivian B. Lewes, of the Royal Naval College, and Secretary of the Board of Trade Committee on Photometric Standards, has been appointed Gas Examiner to the City Corporation. Professor Lewes secured 88 votes against 42 given for Dr. Rideal.

The African Saltpetre Beds.—The reported discovery of large beds of saltpetre by Dr. Peters proves, upon subjecting the supposed deposits to a careful analysis, that it is not nitre after all, but natron, samples of which were brought in 1889 to Berlin by Ehlers, so that intending speculators are doomed to disappointment.

The Shone Sewage System.—The Shone Hydro-Pneumatic Sewage Company, of Chicago, have purchased ground in Forty-fifth street in Chicago, and are erecting an extensive machine shop for the manufacture of their ejectors and sewage appliances, which they have heretofore imported from England.

Dyers on Strike.—Last Saturday, 600 employés at Armitage's dyeworks, Bradford, came out on strike for an advance of wages. The master dyers gave notices to 6,000 men to cease work unless the strike at Messrs. Armitage and Sons terminates. A general lock-out is expected. The wages have remained unaltered for years, and the men are asking for an advance all round.

River Cleansing Made Easy.—The latest suggestion which emanates from London is to fill the Thames with crocodiles, as these animals are said to be excellent scavengers. They certainly do seem pretty keen on human beings, and no doubt would not be above tired cats and dogs; but we fear the addition of a little of the "chemic sauce" contained in the Irwell would prevent these creatures from doing any effectual work on this particular river. If they can only be persuaded to "acquire the taste," which must be somewhat akin to that of green olives, we shall *perhaps*, ere long, find each works keeping a pet crocodile to sport in their effluents, in lieu of settling tanks and filters—perhaps.

Estimation of Nitrous Acid.—The following is the method employed by Messrs. A. G. Green and F. Evershed:—A normal solution of aniline hydrochloride is prepared by dissolving 93 grammes of pure dry aniline, together with 450 c.c. of hydrochloric acid (about 31 per cent. HCl), in 1 litre. Of this solution 25 c.c. is placed in a small stoppered bottle surrounded with ice and water, and is titrated with the nitrite solution (made up about normal) with a constant agitation. From time to time a drop is taken out and mixed on a white plate with a drop of zinc iodide and starch solution until a blue colour indicates the presence of an excess of nitrous acid. When a slight excess of nitrous acid still remains after the contents of the bottle have stood for an hour, the end point is reached. In testing with the starch solution account must only be taken of the blue colour which is produced *at once*, as the drop usually turns blue after standing for some time.

Market Reports.

TAR AND AMMONIA PRODUCTS.

No business is doing in benzol, and prices are rather weaker, 90% being quoted at 1s. 9d. to 1s. 10d., and 50's are nominally at 1s. 6d. There is no change to report in other tar products. Anthracene remains quiet nominally, viz., 1s. for 30% A and 8½d. to 9d. for 30% B. The consumption of alizarine for wool dyeing continues to increase, and though the production of anthracene seems to be more than sufficient to supply the requirements of the near future, the position of this article is certainly much sounder than that of benzol, for which, owing to the holidays and increasing Continental products the prospects appear to be gloomier than ever. Pitch remains firm at old prices.

The present price of the sulphate of ammonia market may be described as under the influence of holiday feelings had there not been such a long holiday already. The figures seem hardly to move, and £10. 5s. Hull and Leith, and £10. 2s. 6d. Liverpool, is still quoted. There are indications that a good deal of sulphate will be required yet this month by speculative dealers to supply their sales, and it is satisfactory to find that sulphate is by no means freely offered. The conclusion to be drawn, therefore, is that when forced purchases have to be made prices will harden. London outside makes are selling at prices ranging from £10. 6s. 3d. to £10. 7s. 6d., while Beckton is still £10.

REPORT ON MANURE MATERIAL.

the week there has been a good business passing, but prices a downward tendency.
l cargoes of 75/80% Florida phosphate rock have been placed not reported, but understood to be about 8½d. per unit, and nearest closing value, 7¼d. would probably buy Peace River /-, and 7d. hot air-dried Bull River rock, and there seems to osition on the part of the larger buyers to be covering their ents ahead at about these prices. Continental phosphates are d.
o of River Plate bones has been sold at £4. 3s. 9d. for summer , and this would probably be accepted for a further one, d. bid and refused. Nothing fresh to report in crushed East ones in the absence of arrivals, £4. 6s. 3d. now asked for ship- Owing to heavy arrivals prices for East Indian bone meal have ed a sharp decline, £4. 5s. accepted for finest quality, and 6d. for inferior, but the quay being now pretty nearly cleared, rices are again required. Good charring bones are worth . 2s. 6d., ex quay Liverpool.
: soda is weak, notwithstanding heavy deliveries for consump- is full value for refined on spot, and inferior best may be had . per cwt.
is a good enquiry for dried blood, and 9s. 6d. nearest value ome prepared, free rails at works. River Plate may be quoted 3d. ex quay Liverpool.

ISCELLANEOUS CHEMICAL MARKET.

is little change to report during the past week in regard to e staple products of the alkali trade. Bleaching powder still in good demand, and the price is firmly maintained at f.o.r. makers' works, and £8. f.o.b. Liverpool and Tyne, and oda is steady at former quotations, viz., f.o.b. Tyne, 77%, ; f.o.b. Liverpool, 74%, £11. 10s. ; 70%, £10. 10s. ; 60%, d. ; cream, 60%, £9. 2s. 6d., in 10 tons. lots. The demand t is fairly good, but in the home trade it is hardly so brisk as oda ash continues to find a steady sale at full prices, viz., r degree f.o.b. for Leblanc makes, and 1 5/16d. for ammonia, oda crystals are without change. Chlorate of potash 7d. per orate of soda 7¼d. Recovered sulphur rather easier in price, is no excess of stock, and quotations on the spot are £5. 5s. s. per ton, f.o.r. makers' works. Vitriol and muriatic acids in good demand, and without change in price. Salt cake in inally 36s. 6d. per ton. White powdered arsenic is rather nd more business doing at £10. 17s. 6d. to £11. per ton. of copper is fairly steady, and in better demand at £15. 5s. os., f.o.b. Acetate of lime (brown) is in excess of require- nd prices are lower on the spot at £6. 2s. 6d. to £6. 5s. per ey acetate of lime without change at £10. White acetate of t, and price merely nominal. Potash, caustic and carbonate ir demand, and without material alteration in value. Per- te of potash is a turn easier. Oxalic acid reported slightly Yellow prussiate of potash 10½d. to 10¾d. per lb. General for miscellaneous chemicals is still unsatisfactory.

VERPOOL OIL AND COLOUR MARKET.

LIVERPOOL, TUESDAY.

—Palm oil continues very quiet, prices are lower, but the only reported is in Cameroon at £19. per ton transit. Olive unaltered from last week, prices likewise being stationary. declined during the week to 19s., but has again risen to last uotation, being steadily held at 19s. 3d. to 20s. 6d. per cwt. in sks. Cotton seed is steady, but no improvement has taken prices, both Liverpool refined and American being still quoted d. per cwt. Castor oil keeps about the same, 2 5/8d. is still good seconds Calcutta, but first pressure French is lower at r lb. Tallow is rather firmer in price, moving quietly at 24s. 6d., for North, and South 27s. per cwt. Resin continues l at last week's prices. Spirits of turpentine has varied from 26s. 6d. during the week, but it is firmer in tone to-day at per cwt. Petroleum steady, American 5¼d. to 6½d., efined 4 3/8d. to 4½d. per gallon.
URS unaltered. Ochres: Oxfordshire, common, £1 £12., best, £15. ; Derbyshire, common, 40s., medium, 50s., best, 60s. Welsh, best, 70s., seconds, 50s., and common, 18s. ; Irish, Devonshire, 40s. to 45s. ; French, J.C., 55s. to 60s. ; M.C., 65s. to 67s. 6d. Umber: Turkish quiet. Devonshire, 50s. to 55s. White lead, red lead, and oxide of zinc unchanged. Venetian red, £6. 10s. to £10. Cobalt: Prepared oxide, 10s. 6d. ; black, 9s. 9d. ; blue, 6s. 6d. Zaffres: No. 1, 3s. 6d. ; No. 2, 2s. 6d. Oxide of iron: common, £6. ; medium, £10. ; finest, £20.

THE METAL MARKETS.

LONDON, TUESDAY.—Pig iron steady; Scotch warrants closed at 41s. 1d. Middlesbrough 37s. 9d. cash, and Hematite 47s. 2d. cash. Copper, improved. Chili bars, G.O.B.'s and G.M.B.'s closed at £45. 13s. 9d. to £45. 15s. cash, and £46. 2s. 6d. to £46. 3s. 9d. three months. Tin steady: Straits closed at £90. 17s. 6d. to £91. 7s. 6d. cash, and £91. to £91. 10s. three months. Australian, £91. cash; English ingots, £94. to £94. 10s. Lead easy: Spanish, £10. 13s. 9d. English, £10. 17s. 6d. to £11. Silesian spelter, ordinary, £22. 10s. Quicksilver, £7., first hands £6. 18s. second hands. Copper shares dull: Cape, 1 1/16 to 1 1/8 ; Copiapo, 2¼ to 2⅜ ; Libiola, 2 15/16 to 3 1/16 ; Mason and Barry, 4 3/16 to 4 5/16 ; Rio Tinto, 16 5/16 to 16 7/16 ; Tharsis, 4 13/16 to 4 15/16 ; Namaqua, 1¼ to 1⅜ ; Panulcillo 15/16 to 1 1/16.
GLASGOW, TUESDAY.—Market easy, with moderate business. No Scotch done; closing buyers at 41s. cash and 41s. 1½d. one month, sellers ask 41s. 1d. cash and 41s. 3d. one month. Middlesbrough done at 37s. 10s. cash, also at 37s. 11½d. and 38s. one month; closing buyers at 37s. 9½d. cash and 37s. 11d. one month, sellers ask 1d. more. Hematite done at 47s. 3d., 47s. 2d., 47s. 4d., and 47s. 2½d., cash; closing buyers at 47s. 2d. cash and 47s. 3½d. one month, sellers ask 47s. 2½d. cash and 47s. 4½d. one month.
WOLVERHAMPTON, WEDNESDAY.—Business at the quarterly meeting to-day was restricted, forward bookings being scarce. Market bars maintained the £8. standard; merchant bars unaltered; common, £5. 15s. to £6. Sheets dull, £6. 15s. to £7. for singles; £7. to £7. 5s. doubles; and £8. lattens, being a reduction of about £3. 5s. on two and a quarter years ago. Galvanised sheets, £12. nominal; Lincolnshire pigs, 47s. 6d. ; Northamptons, and Derbyshire, 44s. to 45s., a drop of 2s. on the quarter. Staffordshire common, 37s.

TYNE CHEMICAL REPORT.

TUESDAY.

Market firm for chemicals, supplies being limited. Bleaching powder in strong enquiry at £7. 10s. to £7. 15s. per ton. Bleaching powder, softs, £7. 10s. per ton, hards, £7. 15s. per ton; caustic soda, 76/77%, £12. per ton, 70%, £10. 15s. per ton; recovered sulphur, 2 cwt. bags, £5. 5s. per ton; soda ash, 48%, £5. 8s. 9d. per ton, 52%, £5. 17s. 9d. per ton, 56%, £6. 6s. 9d. per ton; alkali, 36%, £4. 18s. 6d. per ton; white alkali, 48%, £6. 10s. per ton, 50%, £6. 15s. 6d. per ton, 52%, £7. per ton; hyposulphite of soda, £7. per ton in 5-7 cwt. casks, £7. 15s. per ton in 1 cwt. kegs, both in 10 ton lots; silicate of soda, 75° Tw. £3. per ton, 100° Tw. £4. per ton, 140° Tw. £4. 7s. 6d. per ton; soda crystals, in casks, £3. 5s. per ton gross weight, in 2 cwt. bags, £3. 5s. per ton nett weight; chlorate of potash, 7d. per lb. less 6%; pearl hardening, £3. 10s. per ton nett; pure white sulphate of alumina, £4. 10s. per ton; blanc fixe, £7. 10s. per ton; chloride of barium, £7. 10s. per ton; nitrate of baryta crystals, £19. per ton; nitrate of baryta, ground, £19. 10s. per ton; sulphide of barium, £7. per ton; carbonate of alumina, £28. 10s. per ton; aluminate of soda, £33. 10s. per ton; hydrate of barium, £11. per ton.
South Durham salt, steady at 9s. 6d. per ton nett.
Coals: Only a limited trade doing, owing to strike. Northumberland coal, steam, 10s. 6d. to 11s. per ton nett; gas coals scarce and for prompt 12s. per ton f.o.b. is quoted. Coke, very scarce, £1. per ton is price asked.
Durham strike: The outlook to-day is not encouraging, and there seems little probability of a settlement to allow of a resumption of work this month.

THE LIVERPOOL MINERAL MARKET.

The market continues quiet. Manganese: Sales have been firm at advanced figures. Borate, 6¼d. per lb.; sulphate, £21. 10s.; oxalate, 1s. 6d. per lb.; chloride, £15. ; carbonate, £12. 10s., steady. Magnesite: Raw lump flat. Raw ground £6. 10s., and calcined, £12. 10s. Bauxite (Irish Hill brand) steady; lump, 20s.; seconds, 16s.; and thirds, 12s. French chalk: Arrivals this week are small. Sales

have been made, however, at full figures. "Angel White" brand; silvery, 90s. to 92s 6d.; prime quality, 90s. to 95s; and superfine, 105s. Barytes: Carbonate scarce, especially best lump at 90s. to 95s.; nuts, 70s. to 80s.; whilst finest white sulphate is steady. "Angel White," No. 1, 70s.; No. 2, 60s. to 65s.; No. 3, 45s. Pumicestone steady. Iron ore steady; Bilbao shipments unaltered; Irish and Cumberland easy. Santander and manganiferous, there is more doing. Emerystone continues steady, especially best qualities. No. 1 lump, £5. 10s. to £6.; smalls, £5. to £5. 10s. Fullers' earth quiet; best lump, 55s.; fine impalpable ground, £7.; "Emerald" ground, 80s. Scheelite, wolfram, tungstate of soda, and tungsten metal firm and unaltered. Chrome ore: More doing, especially for the higher qualities. Stocks practically nil. Antimony ore and metal, rather flat. Asbestos very firm. Potters' lead ore, smalls, £10. 10s. to £11. 10s. Calamine easy. Strontia sulphate (celestine) quiet. Limespar unchanged, especially for English manufactured; old G.G.B. brand in demand at 50s. (ground). Felspar unchanged. Fluorspar: Best quality scarce. Ferro-manganese steady, 75%, £12.; 85%, £13. 15s. Plumbago brisk. Spanish, £5.; best Ceylon lump at last quotations; Italian and Bohemian, £4. to £12. per ton. "Founders," £5. to £6.; Blackwell's "Mineraline," £10. French sand, 20s. to 22s. 6d. Ground mica, £45 to £50. China clay steady; common, 18s. 6d.; good medium, 22s. 6d. to 25s.; best, 30s. to 35s. (at Runcorn). Bog ore (oxide of iron) steady; finest quality, 22s. to 23s.

WEST OF SCOTLAND CHEMICALS.

GLASGOW, Tuesday.

The unsettled condition of the labour market has had its effect in the diminishing of production, and through that in perhaps a further stiffening of prices; but there is no natural vitality, and the summation of the transactions carried through continues small. Bleaching powder is still on the up grade owing to these temporary causes, and soda crystals and sulphate of copper are also slightly higher.

In the mineral oil and paraffin section the tone is exceedingly flat. There is no actual fall in prices, but the cause of this seeming firmness is to be found in maker's combination only, no deeper. The combination prices of scale and wax are still as given below, but it is significant that consumers (chiefly the candle makers) still decline to contract for their supplies over the coming season. In past years the contracting was all done, or nearly all, by the beginning of April. The belief is strong that makers must give way to the extent of a farthing drop at least. West Lothian Oil Co.'s mineral leases and plant, put up last week at £20 000. remained without a bidder. They are to be put up to-morrow at £15,000.

Sulphate of Ammonia at the close of last week was thought to be a little stronger, but sellers find they cannot get £10. 5s. as expected, and £10. 3s. 9d. to-day is the most procurable.

Chief prices current are:—Soda crystals, £3. 3s. 9d., nett Tyne; alum in lump, £5. 10s., nett Glasgow; soda ash, 1¾d., less 2½%, Tyne; caustic soda, white, 74°, £11. 10s., 70/72°, £10. 10s., 60/62°, £9. 7s. 6d., and cream 60/62°, £9. 2s. 6d., all nett Liverpool; bicarbonate of soda, 5 cwt. casks, £6 5s., and 1 cwt. casks, £6 10s. nett Tyne; refined alkali, 1⅝d., less 2½% Tyne; bleaching powder, £7. 10s. nett Tyne; saltcake, 37s. 6d.; borax, English refined, £29. 10s. and boracic acid, £37. 10s., nett Glasgow; bichromate of potash, 3¾d., less 12½% for Scotch and English buyers (for export 3½d., less 10% f.o.b. Glasgow); bichromate of soda, 2¾d., less 10% for Scotch and English deliveries (for export 2½d., less 10% f.o.b. Glasgow); chlorate of potash, 6¾d., less 5% any port; nitrate of soda, 9s.; sulphate of ammonia, £10. 3s. 9d. f.o.b. Leith; salammoniac, first and second white, £35. and £33., less 5% any port; sulphate of copper, £15. less 5% Liverpool; paraffin scale (hard), 2 15/16d., and soft 2 5/16d. to 3d. per lb.; paraffin wax, 120°, semi-refined, 3⅜d. to 4d.; paraffin spirit (naphtha), 7d. a gallon; paraffin oil (burning) 5d., 5¼d. and 5½d. according to kind, at works, for Scotch buyers (English sales about 1d. lower); ditto (lubricating), 865°, £3. 10s. to £4., 885°, £5. 5s. to £7., and 890/895°, £6 to £8. Week's imports of raw sugar at Greenock, 14,798 bags.

New Companies.

Henry Bessemer and Company, Limited.—This company was registered on the 5th inst., with a capital of £200,000., in £10. shares (of which 10,000 are 5 per cent. pref.), to acquire and carry on the business of iron and steel makers, ironmasters, smelters, engineers, ironfounders, boiler makers, machine and engine makers, etc., carried on by a company of the same name, now in liquidation, and with a view thereto to enter into an agreement with the old company and D. Allen, its liquidator. The subscribers are:—

	S
W. D. Allen, Carlisle-street, Sheffield, steel manufacturer	
H. Allen, Carlisle-street, Sheffield, steel manufacturer	
W. M. Eadon, 2, St James-street, Sheffield, auctioneer	
V. P. Eadon, 2, St. James-street, Sheffield, stockbroker	
J. A. Brailsford, Mulberry-street, Sheffield, printer	
W J Allen, Carlisle-street, Sheffield, steel manufacturer	
H. Hughes, East Parade, Sheffield, solicitor	

J. Wilson and Company, Limited.—This company was registered 4th inst., with a capital of £10,000., in £1. shares, to acquire and take going concern the business carried on by J. Wilson, at the Anti-Stiff Work Walk, London, S.E., and to carry on the business of importers and manuf of and dealers in pharmaceutical, medicinal, chemical, and other prep The subscribers are:—

	S
J. Wilson, Green Walk, S.E., chemist	
C. Marshall, Green Walk, S.E., currier	
G. B. Martin, 81, Chancery-lane, W.C., artist	
J. H. Lloyd, 7, Poultry, E.C., chemist	
P. Hardy, 27, Alfred-place, W.C., diamond broker	
H. E. Russell, 88, Chalk Farm-road, N.W., chemist	
G. Last, 9, Arlington-road, N.W., traveller	

Oxidising Retort Furnace Syndicate, Limited.—This compa registered on the 1st inst., with a capital of £20,000., in £1. shares, to acqu the inventor, Mr. W. O. Taylor, his invention of and existing rights for an i retort furnace for treating refractory gold and silver ores and other metals take out patents for and work the said invention. The subscribers are:—

	S
A. E. Henley, Stoke House, Sevenoaks, civil engineer	
L. Larranaga, 165, Fenchurch-street, E.C., trading agent	
T. G. Laurence, 165, Fenchurch-street, E.C.	
G. Codrington, 165, Fenchurch-street, E.C., clerk	
H. A. Burrell, 165, Fenchurch-street, E.C., clerk	
G. Gilpin, 70, Mildmay-road, N.	
C. H. Austin, 16, Brocklebank-road, Earlsfield, S.W.	

Gazette Notices.

PARTNERSHIPS DISSOLVED.

Williams and Wells, Woodford, Essex, brickmakers.

Biddles and Church, Kettering, coal, lime, and salt merchants.

A. H. Ambler and W. Taylor, under the style of Ambler, Taylor and Co. chester, oil refiners and importers.

BANKRUPTCY ACTS, 1883 and 1890.

Receiving Orders.

Clay, Francis (trading as the Burgh Castle Cement, Brick, and Lime Co.) Castle, Suffolk, cement and brick merchant.

Adjudications.

Clay, Francis (trading as the Burgh Castle Cement, Brick, and Lime Co.) Castle, Suffolk, cement and brick merchant.

Hellewell, Wm. (trading as the Guide Bridge Paint and Colour Co.) Bridge, near Manchester, paint and colour manufacturer.

Spencer, Robert, Birmingham, chemist.

The Patent List.

This list is compiled from Official sources in the Manchester Te Laboratory, under the immediate supervision of George E. Da Alfred R. Davis, who report professionally upon the value of Ch Patents.

APPLICATIONS FOR LETTERS PATENT.

Improvements in Disinfectants. F. W. A. Hille. 5,979. March 28.

Improvements in Filtering Machinery. H. C. Atkins. 5,986. Marc

Increasing the Illuminating Power of Gas. J. Rudd. 5,994. Marc

Improvements in the Cells for Electrolysing Chloride Solutio Parker and A. E. Robinson. 6,007. March 28.

Improvements in the Production of White Lead and Chrome Pi Sebastian Ziani de Ferranti and J. H. Noad. 6,009. March 28.

Improved Solder for Aluminium. G. Wegner. 6,038. March 29.

Bricks for Heat Resisting and Chemical Purposes. G. G. Blackw and E. G. Scott. 6,053 March 29.

Improvements in the Purification of Coal Gas. W. Belton, G. E. D A. R. Davis. 6,062. March 29.

Ventilating Sewers. H. E. Newton. 6,091. March 29.

Manufacture of Corrugated Roofing, etc. J. Griffiths. 6,107. Mar

Improvements in Accumulators. H. H. Lake. 6,112. March 29.

Printing two or more Colours Simultaneously. R. Hannan. 6,124.

Improved Vacuum Pan. D. Stewart. 6,134. March 30.

Manufacture of Carbonate of Soda. J. C. Ody. 6,139. March 30.

Adapting Domestic Grates for Burning Anthracite Coal. C. T. Bastand. 6,180. March 30.
Increasing the Illuminating Power of Flames. L. Chandor. 6,188. Mar. 30.
Sewage Treatment. J. Price. 6,211. March 31.
Improved Pyrometer. J. H. Pollok. 6,222, March 31.
Improvements in Automatic Sprinklers and Fire Alarms. R. Johnson. 6,237. March 31.
Manufacture of Explosives. O. Imray. 6,258. March 31.
Manufacture of the Alkalies, Chlorine, and Hydrogen by Electrolysis. H. C. Bull. 6,288. April 1.
Deposition of Metals by Electrolysis. J. C. Graham. 6,289. April 1.
Graduated and Durable Measures for Chemical and other Uses. W. Burton. 6,318. April 1.
Improvements in Furnaces for Incinerating Spent Soda Solution. T. Thornley. 6,354. April 1.
New Processes for the Manufacture of Illuminating Gas. C. Bougours de Lamarre. 6,362. April 1.
Treatment of Noxious Gases. F. W. Lacey. 6,396. April 2.
Secondary Voltaic Batteries D. Urquhart and J. M. Small. 6,405. April 2.
Air Moistening and Ventilating Apparatus. E. Edwards. 6,427. April 2.
Manufacture of Elements for Electric or Secondary Batteries. E. Hancock and A. J. Marquand. 6,428. April 2.

IMPORTS OF CHEMICAL PRODUCTS

AT

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending April 2nd.

Acetate of Soda—

Belgium,	9 pkgs.	Magee, Taylor & Co.

Acetate of Lime—

U. S.,	805 pkgs.	Johnson & Hooper

Alum—

Holland,	11 pkgs.	Ohlenschlager Bros.

Alkali—

France,	100 c.	Arnati & Harrison
,,	108	,,

Ammonia—

Holland,	10 pkgs.	J. Owen

Antimony Ore—

Portugal,	62 t.	J. Bamber
France,	½	B. & F. Wf. Co, Ld.

Barytes—

Germany,	23 cks.	W. Harrison & Co.
Belgium,	120	A. Zumbeck & Co.
Holland,	23	Elkan & Co.
,,	46	Magee, Taylor & Co.
Germany,	25	W. Harrison & Co.
Belgium,	40	Hemingway & Co.
Germany,	22	S. Ward & Co.
,,	21	Un. Ltge. Co., Ld.

Brimstone—

Italy,	11 t.	J. Kitchin, Ld.

Bromide of Potassium—

U. S.,	10 pkgs.	L. & I. D. Jt. Co.
,,	10	White Bros.

Bromide of Iron—

Germany,	29 pkgs.	A. & M. Zimmermann

Butyl Hydrate—

Holland,	18 pkgs.	M. Morrison & Co.

Cautchouc—

Rangoon,	207 c.	L. & I. D. Jt. Co.
Germany,	8	Wallace Bros.
Zanzibar,	45	Clarke & Smith
U. S.,	8	J. Walker & Co.
,,	38	L. & I. D. Jt. Co.
,,	5	Anderson, Weber & Smith
,,	4	Kleinworth, Sons & Co.
Mozambique,	30	Lewis & Peat
Zanzibar,	14	L. & I. D. Jt. Co.
Savanilla,	8	,,
Bahia,	25	Anderson, Weber & Smith
Germany,	183	Prop. Bull Wf.
,,	5	Anderson, Weber & Smith
,,	3	Craven & Co.

Carbonate of Potash—

France,	5 cks.	Spies, Bros. & Co.

Carbonic Acid Gas—

Germany,	41 pkgs.	J. G. Fisher
Holland,	30 pkgs.	Volcanic Aeration Co.
,,	20	Phillipps & Graves

Caustic Potash—

France,	240 c.	Carey & Sons
,,	4 pkgs.	Spies, Bros. & Co.

Chemicals (*otherwise undescribed*)

Germany,	1 pkg.	H. Lambert
,,	39	A. & M. Zimmermann
,,	15	Phillipps & Graves
,,	5	Craven & Co.
,,	£15	W. J. Fox
Germany,	3 pks.	L. & I. D. Jt. Co.
,,	26	A. & M. Zimmermann
Holland,	£10	T. Palmer
Germany,	16 pkgs.	Phillipps & Graves
,,	4	T. & H. Smith & Co.
,,	1	Phillipps & Graves
,,	26	T. H. Lee
,,	13	A. & M. Zimmermann
Holland,	8	Phillipps & Graves

Barium Chloride—

Germany,	25 pkgs.	Petri Bros.

Chlorate of Soda—

France,	100 pkgs.	A. Hughes

Citrate of Lime—

Italy,	10 pkgs.	Thames S. T. & L. Co., Ld.

Cobalt Ore—

Australia,	24 t.	R. C. Carr

Copper Pyrites—

Spain,	500 t.	Anderson, Anderson & Co.

Cream of Tartar—

Italy.	20 pkgs.	Howards & Son
France,	10	B. & F. Wf. Co, Ld.
,,	4	Smith, Abbot & Co.
,,	10	W. C. Bacon & Co.
,,	5	M. Ashby, Ld.
,,	3	Evans, Lescher & Co.
,,	5	B. & F. Wf. Co., Ld.
Italy,	20	B. Jacob & Sons
Holland,	10	B. & F. Wf. Co., Ld.
,,	5	Middleton & Co.
France,	5	B. & F. Wf. Co., Ld.
Holland,	5	J. Owen

Dyestuffs—

Aniline

Holland,	5 pkgs.	R. Baelz & Co.

Argols

Italy,	6 pkgs.	Hunter
,,	517	B. Jacob & Sons

Cutch

Rangoon,	500 pkgs.	Elkan & Co.
,,	2,348	H. A. Litchfield
,,	300	J. Owen
France,	25	Hoare, Wilson & Co.
Rangoon,	1,200	Wallace Bros.
,,	245	A. Howden & Co.
,,	484	Phillipps & Graves
,,	66	J. & G. Bullock & Co.
,,	50	L. & I. D. Jt. Co.
Singapore,	521	J. Swire & Sons

Extracts

Germany,	1 pkge.	L. & I. D. Jt. Co.
U. S.,	50	Skilbeck Bros.
Denmark,	28	Sorensen & Co.
U. S.,	12	W. Burton & Sons
,,	10	Beresford & Co.
Belgium,	50	Leach & Co.
Germany,	2	L. & I. D. Jt. Co.
France,	1	Hernu, Peron & Co.
Denmark,	14	Bailey & Leetham
Canada,	84	A. J. Humphrey

Indigo

Germany,	3 chts.	F. W. Heilgers & Co.
E. I.,	3	L. & I. D. Jt. Co.
,,	10	Benecke, Souchay & Co.
,,	15	L. & I. D. Jt. Co.
,,	18	,,
,,	55	,,

Myrabolams

E. I.,	675 pkgs.	J. Graves
,,	1,078	Baxter & Hoare
,,	1,306	J. Graves
,,	1,721	L. & I. D. Jt. Co.
,,	1,821	H. A. Litchfield & Co.
,,	6,830	Hoare, Wilson & Co.
,,	4,611	Beyts, Craig & Co.
,,	807	Ralli Bros.
,,	667	L. & I. D. Jt. Co.
,,	2,872	J. P. Alpe & Co.
,,	217	Clarke & Smith
,,	5,422	W. Shelcott

Orchella

Zanzibar,	70 pkgs.	Gray, Dawes & Co.

Sumac

Italy,	30 pkgs.	Co-op. L. As., Ld.
,,	500	G. S. N. Co.
,,	300	W. Shelcott
,,	550	J. Kitchin, Ld.

Tanners' Bark

Belgium,	14 t.	Arnati & Harrison
Natal,	2	G. H. Penney & Co.

Turmeric

E. I.,	328 pkgs.	Major & Field
,,	356	L. & I. D. Jt. Co.
,,	75	Clarke & Smith

Valonia

Turkey,	145 t.	A. & W. Nesbitt
,,	145	,,
,,	25	Beresford & Co.
Greece,	16	J. Graves
A. Turkey,	131	A. & W. Nesbitt
,,	100	Boutcher, Mortimore & Co.

Farina—

Germany,	248 pks.	Seaward Bros.

Glucose—

France,	200 pkgs.	200 c.	J. Barber & Co.
,,	200	200	J. F. Oldham
U. S.,	50	298	J. Knill
,,	70	419	R. G. Hall & Co.
,,	50	275	Prop. Chmbln's Wf.
,,	250	250	Trier, Meyer & Co.
,,	50	275	Prop. Chmbln's Wf.
,,	50	300	Union Lthrge. Co., Ld.
,,	50	302	Soundy & Sons
,,	50	301	Page, Son & East
,,	50	100	A. A. Curtis & Co.
,,	100	600	R. G. Hall & Co.
,,	1,500	1,510	R. G. Hall & Co.
,,	20	120	J. Barber & Co.
,,	100	600	Fowler Bros & Co.
,,	30	165	Prop. Chmbln's Wf.
,,	500	500	Lichtenstein & Co.
,,	50	275	Prop. Chmbln's Wf.
,,	2,030	4,180	R. G. Hall & Co.
,,	100	580	Pillow, Jones & Co.

Glycerine—

Germany,	£52	A. & M. Zimmermann
France,	800	Williams, Torrey & Co., Ld
Germany,	20	Ellis, Kislingbury & Co.
,,	60	A. & M. Zimmermann
Holland,	50	J. Owen
Germany,	20	Ellis, Kislingbnry & Co.
,,	45	Beresford & Co.
Holland,	420	Spies Bros. & Co.

Guano—

Lobos,	2,651 t.	Ang.-Contl. Guano Wks.
Belgium,	13	Ang.-Contl. Guano Wks.

Gum Arabic—

Germany,	222 c.	Hoare, Wilson & Co.
Zanzibar,	72	L. & I. D. Jt. Co.
E. I.,	57	Beresford & Co.

Hyposulphite of Soda—

Germany,	100 pkgs.	A. & M. Zimmermann

Magnesium—

Germany,	1 pkge.	Phillipps & Graves

Manure (*otherwise undescribed*)—

France,	400 t.	Sawer, Mead & Co.
Germany,	5	T. H. Lee
Portugal,	21	G. Bennett & Sons
Germany,	13	Beresford & Co.
France,	132	Miller & Johnson
U. S.,	5	C. & A. H. Nichols

Methyl Alcohol—

Germany,	16 drs.	H. Johnson & Sons
,,	10 cks.	Lister & Biggs
Belgium,	A quantity.	Stein Bros.

Ochre—

France,	75 cks.	Stobbs, Wilson & Co.

Olive Oil—

Italy,	1 tun 180 g.	Collett, Dodds & Co.
,,	1	H. Johnson & Son
France,	16 g.	J. T. Morton
,,	185	Beresford & Co.

Oxide of Zinc—

U S.,	100 brls.	M. Ashby, Ld.
Germany,	10 cks.	Beresford & Co.
Holland,	10	J. Matton
,,	150 brls.	M. Ashby, Ld.
Germany,	50 cks.	,,

Painters' Colours—

Germany,	9 pks.	T. H Lee
,,	15	W. Harrison & Co.
France,	1	Flageollet & Co
,,	7	Bennett S S. Co., Ld.
Italy,	24	Simi & Co., Ld.
Belgium,	4	Arnati & Harrison
Germany,	8	L. & I. D. Jt. Co.
,,	12	Craven & Co.
,,	10	Escombe Bros. & Co.
E. Turkey,	1	H. W. Wright
Germany,	8	T. H. Lee
Belgium,	7	T. Palmer
France,	5	Flageollet & Co.
Holland,	2 cks.	R. Baelz & Co.
Germany,	80 cks.	O. Pause & Co.
U. S.,	1 cs.	Harrold Bros.
,,	1	Jackson, Clayton & Co.
,,	50 pks.	A C. Davey
Germany,	25	Phillipps & Graves
,,	32 cks.	T. Hamilton
,,	7	H. Keller & Co.
U. S.,	20 pks.	L. P. D. Co.
Belgium,	3 cks.	T. Palmer
France,	1 pk.	Bennett S S. Co., Ld.

Paraffin Wax—

U. S.,	8 brls.	Williams, Torrey & Co.
,,	1,000	Williams, Torrey & Co.
Holland,	8	T. H. Lee
U. S.,	204	Prod. Broker's Co.

Phosphate Rock—

Belgium,	216 t.	Odam's Chem. Mnre. Co.
U. S.,	919	A. Hunter & Co.
Germany,	50	,,
France,	150	D. de Pars & Co.
U. S.,	1,000 t.	Wyllie & Gordon

Pitch—
Archangel, 100 cks. Linch, Moeller & Co.
Germany, 49 brls. C. B. Leighton
France, 150 ,,
Germany, 126 cks. Fellows, Morton & Co.

Plumbago—
Ceylon, 188 brls. R. G. Hall & Co.
,, 289 H. W. Ison
Holland, 9 cks. B. Galloway

Potassium Carbonate—
Holland, 7 pks. A. J. Luke & Co.
France, 21 Beresford & Co.

Potash—
Germany, 10 cs. L. & I. D. J. T. Co.

Quicksilver—
N. Tursia, 240 btls. L. & I. D. Jt. Co.

Saltpetre—
E. I., 161 bgs. L. & I. D. Jt Co.
Germany, 70 P. Hecker & Co.
,, 20 kgs. Baiss Bros.

Stearine—
U. S., 69 cks. W. Balchin

Sulphate of Potash—
Germany, 508 pks. Ang.-Contl. Guano Wks

Tallow—
Queensland, 3 cks. Gray, Dawes & Co.
,, 164 Goad, Rigg & Co.
,, 7 Leach & Co
Belgium, 50 H. Hiller & Sons
U. S., 20 R. Tucker & Co.
Queensland, 3 Leach & Co.
Sydney, 18 Coml. Bnkg. Co. of Sydney

Tar—
Russia N., 1,107 brls. Linch, Moeller & Co.

Tartaric Acid—
Holland, 13 pks. B. & F. Wf. Co., Ld.
,, 50 Middleton & Co.

Ultramarine—
Holland, 5 cs. Phillipps & Graves
Germany, 4 cks. H. Brooks & Co.
,, 10 cs. J. Kitchin, Ld.
,, 5 cks. Magee, Taylor & Co.

Varnish—
U. S., 44 pks. Williams, Torrey & Co.
,, 2 Allan Bros. & Co.
Belgium, 4 pks. Stobbs, Wilson & Co.

Vermilion—
Germany, 1 cs. Phillipps & Graves

Verdigris—
France, 2 pks. W. Ashwell

White Lead—
Holland, 8 brls. Societe Maritime Belge
Belgium, 1 csk. Leach & Co.
,, 4 brls. Arnati & Harrison
Germany, 65 cks. Randall Bros.
,, 25 W. Harrison & Co.
,, 110 J. Kitchin, Ld.
,, 22 Petrie Bros.
,, 24 M. Ashby, Ld.
Belgium, 1 Arnati & Harrison

LIVERPOOL.

Week ending April 2nd.

Acetate of Soda—
Antwerp, 17 cks.

Acetic Acid—
Hamburg, 6 dms.
Rotterdam, 10 botls.

Barytes—
In transit, 210 cks.

Carbonic Acid Gas—
Rotterdam, 25 tubes.

Ceresin—
Hamburg, 5 cs.

Chemicals—
Rotterdam, 4 cks.

Colours—
Rotterdam, 10 cs. 12 cks.
,, 9 10

Copper Pyrites—
Huelva, 2,312 t. Tennants & Co.
,, 1,000

Cream of Tartar—
Bordeaux, 7 cks.
Barcelona, 5

Dyestuffs—
Algarobilla
Valparaiso, 885 sks. Balfour, Williamson & Co.
Cutch
Rangoon, 500 bxs.
Divi Divi
Hamburg, 1,620 bgs.
Logwood Extract
Philadelphia, 250 bxs. 75 brls.
Logwood
Jamaica, 410½ t. B. Hall & Co.
Madder
Rotterdam, 2 cks.
Sumac
Palermo, 175 bgs.
,, 500
Valonia
Marathonisi, 153 bgs. Robinson & Hadwen
Syra, 600 A. C. Cozzifachi
,, 3 G. T. Scrini
,, 50 Androulis Bros.
,, 372 C. G. Nicolaidis
,, 321
Constantinople, 849

Glucose—
Hamburg, 76 cks.

Iodine—
Valparaiso, 178 brls. A. Gibbs & Sons

Kainit—
Hamburg, 627 bgs.

Limestone—
Antwerp, 2 frms.

Manganese—
Hamburg, 1 ck.
Rotterdam, 1

Nitrate of Soda—
Iquique, 9,040 bgs.

Phosphate—
Ghent, 2,000 bgs.
Dunkirk, 1,000
Terneuzen, 350 t.
Antwerp, 700

Phosphate Rock—
Fernandina, 1,960 t. T. Harling & Co.

Pitch—
Bordeaux, 30 cks.
Hamburg, 60

Plumbago—
Hamburg, 8 brls.

Potash—
Dunkirk, 68 dms. 2 cks.

Quicksilver—
Gijon, 250 btls. J. Batt
,, 123 A. Ruffer & Son

Rosin—
Maranham, 44 pkgs. H. Evans & Co.

Saltpetre—
Hamburg, 40 kgs.

Soap—
Philadelphia, 8 pkgs.
Syra, 3 cs. C. G. Nicolaidis
Rotterdam, 5

Soapstone—
Bordeaux. 150 bgs. G. G. Blackwell

Sulphur—
Catania, 75 t. 2,250 bgs. 109 brls.
Huelva, 1,064 Matheson & Co.

Sulphur Pyrites—
Huelva, 1,697 t. Matheson & Co

Tallow—
In transit, 5 brls.
Rouen, 141 bgs. R. J. Francis & Co.

Tartar—
Bordeaux, 33 cks.
Naples, 1 R. Powles
,, 10

Tartaric Acid—
Rotterdam, 8 cks.
,, 19

Turpentine—
Constantinople, 2 cs.

Ultramarine—
Rotterdam, 5 cs.
,, 2 1 crt.

Varnish—
Havre, 5 pkgs.

White Lead—
Rotterdam, 61 cks.

Zinc Oxide—
St. Nazaire, 10 brls.
Rotterdam, 2 cks.
Antwerp, 20 brls. J. F. Fletcher & Co.

GLASGOW.

Week ending April 7th.

Barytes Sulphate—
Antwerp, 350 bgs.
Rotterdam, 146 cks.

Chemicals *(otherwise undescribed)*
Rotterdam, 10 bgs. J. Rankine & Son
Hamburg, 2 css.

Cream of Tartar—
Rotterdam, 6 cks. J. Rankine & Son
Messina, 4

Dyestuffs—
Alizarine
Rotterdam, 54 cks. 5 css.
Aniline Colours
Rotterdam, 7 cs. 5 cks. J. Rankine & Son
Indigo
New York, 13 chts.
Madder
Bordeaux, 4 cks.
Rotterdam, 7 J. Rankine & Son

Fluoride of Chromium—
Rotterdam, 1 cs. J. Rankine & Son

Glucose—
Rouen, 50 brls.
New York, 100

Ochre—
Rouen, 57 cks.

Painters' Colours—
Antwerp, 5 cks.

Paint—
In transit, 5 css.

Rosin—
New York, 497 brls.

Soap—
Antwerp, 5 cks.

Sulphur—
Messina, 1,000 bgs. 42 brls.

Tallow—
New York, 20 trcs.

Tannin—
Hamburg, 1 cs.

Tartar—
Bordeaux, 28 cks.

Varnish—
New York, 4 brls.
,, 22 1 cs.
In transit, 5 css.
New York, 10

White Lead—
Antwerp, 8 cks.
Rotterdam, 80

Zinc Oxide—
Rotterdam, 36 cks. J. Rankine & Son

HULL.

Week ending April 2nd.

Barytes—
Rotterdam, 2 cks. Furley & Co.
Bremen, 24 Veltmann & Co
Rotterdam, 11 G. Lawson & Sons
,, 49 Blundell, Spence & Co.
Antwerp, 57

Caoutchouc—
Hamburg, 6 bls. M. Lofthouse & Co.
,, 9 cs.
,, 15 Wilson, Sons & Co., Ltd.

Cellulose—
Hamburg, 80 bls. Geo. Lawson & Son

Chemicals *(otherwise undescribed)*
Bremen, 1 s. Veltmann & Co.
Rotterdam, 5 bgs. Wood Wanright
Hamburg, 13 cs. Wilson, Sons & Co., Ltd.
,, 18 pks.
Dunkirk, 67 Wilson, Sons & Co., Ltd.

Chalk—
Antwerp, 100 bgs. Wilson, Sons & Co., Ltd.

Colours—
Rotterdam, 3 bxs. Hutchinson & Son
,, 16 cs. 24 cks. W. & C. L. Ringrose
,, 2 Geo. Lawson & Son
Flushing, 9 40 3 pks. Z
Rotterdam, 17 W. &
Antwerp, 66
Ghent, 2
Bremen, 3 Sons & Co
,, 2
,, 8 G. M
Rotterdam, 7 G. L
,, 35 W. &
,, 2 Hutch
Flushing, 7 21 6
Rotterdam, 4 Hutch
Antwerp, 3 brls. Wilson, & Co.
,,

Dyestuffs—
Argols
Bordeaux, 22 bgs.
Alizarine
Rotterdam, 12 brls. Hutch
,, 2 cs. 34 cks. W. &
,, 48 pks. ,,
Madder
Rotterdam, 3 cks. Hutchinson
Sumac
Palermo, 1,000 bgs.

Farina—
Ghent, 104 bxs.
Hamburg, 50 pks. Wilson, & Co.

Glucose—
Drontheim, 10 cks. Wilson, So Co.
New York, 350 brls.

Kaolin—
Rotterdam, 388 bgs. Reckitt &

Kainit—
Hamburg, 200 bgs. G. Lawson &

Manganese—
Amsterdam, 100 t. J. Good &

Naphtha—
Rotterdam, 2 drms. W. &
Rin

Ochre—
Rouen, 8 cks.

Phosphate Rock—
Fernandina, 984 t.

Rosin—
Bordeaux, 37 cks. Sisson Bros. &

Saltpetre—
Hamburg, 5 cks.

Soap—
Rotterdam, 2 cs. Hutchinson &

Stearine Pitch—
Hamburg, 61 bls. W. Jackson &
Antwerp, 32 bgs. Wilson, Sons &

Sulphur—
Catania, 1,470 pks Wilson, Sons &
,, 1,020

Tar—
Dunkirk, 2 cs. Wilson, Sons &

Tartaric Acid—
Rotterdam, 5 cks. Hutchinson &

Ultramarine—
Rotterdam, 8 cks. Todd &
,, 6 Hutchinson

Varnish—
New York, 3 cs. 6 pks. Wilson, & Co.

Vermilion—
Bremen, 1 cs. Veltmann

Waste Salt—
Hamburg, 1,108 bgs.

White Lead—
Rotterdam, 26 cks. Sisson Bros.
,, 12
,, 4 J. & T. S
,, 1 J. F. S

Wood Pulp—
Hamburg, 61 bls. T. Jackson

TYNE.

Week ending April 2nd.

Alum Earth—
Hamburg, 27 cks. Tyne S.S. Co.
Barytes—
Rotterdam, 11 cks.
Dyestuffs—
Alizarine
Rotterdam, 10 brls.
Potash—
Hamburg, 8 cks. Tyne S.S. Co.
Sulphate of Lead—
Gothenburg, 74 brls.

GOOLE.

Week ending March 23rd.

Alum—
Rotterdam, 69 cds.
Caoutchouc—
Boulogne, 6 cks.
Dyestuffs—
Alizarine
Rotterdam, 22 cds.
,, 47 pkgs.
Dyestuffs *(otherwise undescribed)*
Boulogne, 83 cks.
,, 21 cs.
Extract of Tannin—
Hamburg, 20 cks.
Farina—
Rotterdam, 100 bgs.
Hamburg, 24
Glucose—
Calais, 300 bgs.
Logwood—
Kingston, 713 t.
Sav. la Mar, 485
Jamaica, 570
Muriate—
Rotterdam, 100 bgs.
Ochre—
Rouen, 8 cds.
Phosphate—
Ghent, 800 bgs.
Potash—
Rotterdam, 30 cds.
Dunkirk, 13 pkgs.
,, 12 dms.
Calais, 20 cds.
,, 39 dms.
Saltpetre—
Rotterdam, 100 bgs.

GRIMSBY.

Week ending March 26th.

Chemicals *(otherwise undescribed)*
Antwerp, 10 cds.
Hamburg, 19 pkgs.
Rotterdam, 6
Farina—
Hamburg, 22 bgs.
Size—
Antwerp, 10 cds.
Zinc Ashes—
Antwerp, 16 cds.

EXPORTS OF CHEMICAL PRODUCTS

OF

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending April 6th.

Alkali—
Constantinople, 11 c. £10
Ammonia—
Yokohama, 3 cs. £12
Hamburg, 8 c. 18
Melbourne, 48 pkgs. 350
B. Ayres, 6 100
Ammonium Carbonate—
Sydney, 10 cs. £20
Ammonium Sulphate—
St. Kitts, 30 t. £300
Dominica, 12 120
Guernsey, 1 10
Jersey, 2 27
Hamburg, 50 525
Martinique, 200 2,200
Antigua, 6 63
Martinique, 20 8 c. 220
Berbice, 15 180
Demerara, 156 1,122
Ostend, 40 15 461
Dunkirk, 24 246
Antwerp, 50 512
Hamburg, 100 8 1,000
,, 202 6 2,085
Bicarbonate of Soda—
Rangoon, 5 c. £2
Dunedin, 1 8
Aucklands, 10 4
Wellington, 5 2
Sydney, 1 8
Blackriver, 5 2
Kingston, 10 4
Algoa Bay, 3 1
Auckland, 11 12
Canterbury, 1 5 9
,, 2 10 17
Natal, 5 3
Bluestone—
Malta, 3 t. £48
Borax—
Hamburg, 8 cks. £64
,, 1 13
Brimstone—
Mackay, 19 brls. £25
Madeira, 8 t. 5 c. 81
,, 2 4 25
Carbolic Acid—
Wellington, 50 drs. £45
Colombo, 6 c. 16
Rotterdam, 48 147
Carbonic Acid Gas—
Paris, 15 tubes. £35
,, 10 34
Bermuda, 10 45
Caustic Soda—
Melbourne, 8 c. £14
Auckland, 5 t. 6 53
E. London, 7 12
Natal, 3 5
Cuidad Bolivar, 4 t. 2 47
,, 4 9 64
Cape Town, 11 16
Napier, 5 5 56
Algoa Bay, 13 39
Chemicals *(otherwise undescribed)*
Calcutta, 7 cks. £57
Sydney, 4 pkgs. 12
,, 30 kgs. 43
,, 26 35
Kurrachee, 5 10
Chlorate of Potash —
Malta, 12 cks. £29
Citric Acid—
Toronto, 20 kgs. £157
Sydney, 2 c. 19
Rotterdam, 2 cks. 70
Hamburg, 4 170
Malmo, 4 34
Brussels, 10 84
Lisbon, 6 49
Hamburg, 1 8
New York, 1 t. 168
B Ayres, 6 50
Coal Products *(otherwise undes.)*
Sydney, 75 cks. £65
Coal Products—
Aniline Dyes
New York, 26 pkgs. £570
Coal Tar Dyes
Boston, 2 pkgs. £107
Naphthalene
Hamburg, 16 cks. £34
Odessa, 31 14
New York, 84 pkgs. 139
Pitch
Alexandria, 200 brls. £60
Baltimore, 392 bgs. 83
Antwerp, 144 t. 252
St. Nazaire, 1,249 1,936
Dunkirk, 140 231
Ancona, 1,685 2,880
M. Video, 15 12
Dunkirk, 110 182
St. Nazaire, 708 1,060
Tar
Calcutta, 102 runs. £70
Adelaide, 36 cks. 50
Kingston, 7 9
Gothenburg, 100 79
Bombay, 38 53
M. Video, 10 7
Tar Oil
Stettin, 50 brls. £30
Dunkirk, 25 cks. £50
Cream of Tartar—
Wellington, 2 c. £10
Sydney, 5 29
Auckland, 1 t. 1 90
Disinfectants—
Kingston, 6 pkgs. £10
Paris, 2 t. 15
Brisbane, 11 35
Kurrachee, 50 drs. 20
Paris, 6 cks. 30
Adelaide, 2 19
Auckland, 13 15
Bombay, 200 104
Flowers of Sulphur—
E. London, 3 t. 11 c. £40
Fluoric Acid—
Melbourne, 3 kgs. £19
Guano—
Cherbourg, 10 t. £80
Lenderneau, 370 3,700
Jersey, 20 200
Valencia, 307 12 c. 2,465
Manure—
Rotterdam, 15 t. £120
Cherbourg, 65 12 c. 459
Hamburg, 23 13 123
Jersey, 5 35
Cullera, 621 19 4,911
Bordeaux, 9 17 51
Jersey, 28 205
Hamburg, 4 19 27
Rouen, 97 495
Mirbane Oil—
Sydney, 10 c. £48
Hamburg, 3 t. 12 160
New York, 12 cks. 150
Muriate of Ammonia—
Amsterdam, 5 c. £9
Rotterdam, 2 cks. £9
Hamburg, 14 87
Nitric Acid—
Jersey, 24 cs. £44
Oxalic Acid—
New York, 24 cks. £300
Phosphorus—
Halifax, 6 cs. £42
Potash Crystals—
Melbourne, 7 c. £54
Bordeaux, 2 cs. 14
Halifax, 4 25
Potassium Iodide—
Melbourne, 1 c. £61
Saltpetre—
Wellington, 7 c. £8
Dunedin, 5 6
Sydney, 5 t. 9 110
Oporto, 2 4 44
Auckland, 10 kgs. 11
Natal, 10 11
Hamburg, 4 9 100
Bahia, 3 6 73
Rio de Janeiro, 16 12 374
Bahia, 1 13 37
Sheep Dip—
Natal, 10 cs. £25
,, 200 drs. 280
,, 11 c. 23
Sydney, 6 13 125
Silver Nitrate—
Bombay, 1 cs. £80
Sydney, 2 c. 120
Soda—
Adelaide, 1 t. 10 c. £12
Oporto, 10 6
Kingston, 1 2 7
Madeira, 4 1
Alexandria, 14 11
Natal, 10 5
Soda Crystals—
Patea, 7 c. £1
Natal, 10 2
M. Video, 13 3
Sodum Tartrate—
Hamilton, 5 brls. £31
Sulphate of Copper—
Bordeaux, 5 t. 14 c. £75
Marseilles, 20 2 570
Bordeaux, 21 8 271
M. Video, 1 2 17
Bordeaux, 5 2 74
Brussels, 5 72
Sulphate of Soda—
Ghent, 110 t. £165
Sulphuric Acid—
Calcutta, 1 t. 18 c. £18
Superphosphate—
Martinique, 355 t. £1,180
Tartaric Acid—
Wellington, 2 c. £11
Hamilton, 1 ck. 26
Sydney, 3 36
Canterbury, 5 18
,, 10 53
Rangoon, 2 cs. £12

LIVERPOOL.

Week ending April 6th.

Acetic Acid—
Lisbon, 1 t. 15 c. £26
Alum—
Cape Town, 2 t. 2 c. £13
Corunna, 1 5
Carril, 1 5
Alexandretta, 2 10 15
Melbourne, 10 51
Lornaca, 15 5
Alexandria, 14 3 81
Brisbane, 8 3 q. 3
M. Video, 18 5
Smyrna, 65 cks. 53
Ammonium Carbonate—
Genoa, 1 t. 10 c. £49
Gothenburg, 15 1 q. 27
Carril, 5 8
Odessa, 1 33
Antwerp, 1 0
Ammonium Chloride—
Alexandria, 2 t. 1 c. 1 q. £68
Antwerp, 6 7
Boston, 5 2 171
Samoun, 6 9
Smyrna, 1 5 2 41
Ammonium Sulphate—
Rotterdam, 50 t. £600
Valencia, 123 10 c. 3 q. 880
Barbadoes, 20 210
Rotterdam, 9 19 105
Bordeaux, 5 5 1 53
Hamburg, 50 11 1 508
Nantes, 10 105
New York, 24 19 2 275
Charente, 50 600

Arsenic—
New York, 10 cks.

Barium Chloride—
Carril, 2 c. £7

Barytes Carbonate—
Carril, 1 brl.

Bicarbonate of Soda—
Christiania, 30 kgs. 2 cks.
Genoa, 125 9
Havre, 95
Hiogo, 500
Kingston, 20
Nagasaki, 200
Naples, 80 1
San Francisco, 30
Stettin, 15
Yokohama, 1,250
Alexandretta, 45 7 brls.
Antwerp, 10 19 cks.
Barcelona, 490
Bombay, 500
Bremerhaven, 38
Bremen, 28
Calcutta, 2,875
Charlottetown, 100
Constantinople, 20
Dunkirk, 10
East London, 10
Huelva, 30
Kurrachee, 425
Manzanillo, 5
Maryborough, 20
Melbourne, 624
" 350 10
Naples, 10
Pasages, 120
Portland, 100
Port Natal, 31
Rotterdam, 50
Salonica, 40
Singapore, 7
Smyrna, 20
Syra, 280
Trieste, 170
Venice, 100
Yokohama, 500

Bleaching Powder—
Baltimore, 145 cks.
Barcelona, 10 kgs. 5 brls.
Boston, 81 cks.
Buenos Ayres, 6 cs.
Halifax, 4
Malaga, 10
Rouen, 14
San Sebastian, 44
Baltimore, 210
Bilbao, 23
Bombay, 15
Boston, 1,004
Calcutta, 104
Galveston, 1
Havana, 14 5
Montreal, 16
New York, 593 45 brls.
Pasages, 5
Philadelphia, 144
Trieste, 10
Valparaiso, 66

Boracic Acid—
Antwerp, 1 t. 7 c. £51
Havre, 1 2 2 q. 45

Borax—
Buenos Ayres, 10 brls.
Cardenas, 2 cks.
Rotterdam, 35
Antwerp, 3
Lisbon, 7
St. John's, 2 brls.
Lisbon, 2 t. £58
Antwerp, 1 6 c. 2 q. 7
St. John's, N.B., 7 10
Rouen, 11 9 384
Rotterdam, 1 5 1 38

Borate of Lime—
Hamburg, 5 3 0 65

Calcium Chloride—
Brisbane, 10 1 22
Sydney, 15 1 33
Boston, 10 3 22

Carbolic Ac'd—
Rotterdam, 2 t. 19 c. £155
Shanghai, 4 cs. 20
Singapore, 10 drms. 10
N. Y., 9 t 11 c. 1 q. 320
Hiogo, 12 1 26
Yokohama, 12 2 26
Hiogo, 12 1 26
Rouen, 1 2 0 15
Rotterdam, 13 18 3 670
Calcutta, 3 cs. 44

Caustic Potash—
Chicago, 1 t. 2 c. £124
Portland, 10 12

Caustic Soda—
Acajutla, 35 dms.
Algoa Bay, 10 bxs.
Alicante, 40 dms.
Baltimore, 200 170 brls.
Beyrout, 40
Bombay, 20
Boston, 100
Buenos Ayres, 20
Gijon, 20
Hamburg, 1 brl. 59 dms.
Ibrail, 12 dms.
Odessa, 50
Penang, 3
Newfairwater, 68
New York, 185
Portland, Me., 33
Puerto Cabello, 8
San Sebastian, 50
Santander, 30
Stettin, 14
Alexandria, 100
Antwerp, 4
Bahia, 30
Baltimore, 340 brls.
Bombay, 10
Boston, 610
Bremerhaven, 10
Brisbane, 20
Buenos Ayres, 20
Carril, 3
Charlottetown, 34
Chicago, 250
Galatz, 17
Galveston, 105
Genoa, 95
Hamburg, 251
Havana, 20
La Guayra, 40
Madras, 198
Madrid, 35 brls. 110 kgs. 310 dms.
Malta, 3 dms.
Messina, 101
Monte Video, 60
Montreal, 85
Nantes, 173
New York, 10 cks. 1870 dms.
Oporto, 101 dms.
Pernambuco, 36
Portland, 40
Rotterdam, 527
San Francisco, 300
San Juan, 2 kgs.
Sydney, 15
Tarragona, 20 cks. 20 dms.
Trieste, 63 dms.

Chemicals *(otherwise undescribed)*
Galatz, 9 c. 3 q. £17
Alexandria, 1 t. 33
Odessa, 3 105
Leghorn, 10 19

Chlorate of Lime—
Boston, 266 cks.

Copperas—
Alexandria, 4 t. 11 c. £7
Galatz, 7 4 2 q. 15
Constantinople, 7 6 14
Alexandretta, 6 18 1 14
Calcutta, 40 91

Copper Sulphate—
Rotterdam, 5 t. 2 c. 2 q. £75
Barcelona, 15 4 225
Leghorn, 5 2 3 132
Marseilles, 121 19 2 1,900
Nantes, 69 10 0 1,125
Bordeaux, 106 8 3 1,628
Calcutta, 5 76
Samsoun, 1 5 17
Marseilles, 4 18 3 77
Barcelona, 9 2 128
Constantinople, 1 5 18
Oporto, 2 30
Rouen, 70 15 1,159
Constantinople, 1 5 30
Venice, 2 2 29
Antwerp, 8 4 121
Leghorn, 5 1 2 76
Genoa, 2 8 36
Antwerp, 1 14 3 26
Barcelona, 2 10 37
Bordeaux, 10 146
Ghent, 8 100
Lisbon, 3 44
Dunkirk, 1 5 0 18
Venice, 36 4 500
Antwerp, 4 5 61

Cream of Tartar—
Halifax, 2 cks. £80

Dried Blood—
Portland, Me., 1 t. 18 c. £35

Gypsum—
New York, 35 t. 13 c. £123

Magnesia—
Carril, 1 cs.

Magnesium Chloride—
Singapore, 10 dms.
New York, 38
Rangoon, 30
Sydney, 20
" 5 t. 1 c. £11
New York, 9 17 27
Rangoon, 1 13 7

Manure—
Havana, 1 t. 15 c. £28
Barbadoes, 20 166
Rouen, 4 10 0 24

Muriatic Acid—
Trinidad, 30 cs. £21

Oxalic Acid—
Barcelona, 10 t. £280

Phosphate—
Matanzas, 68 t. 5 c. £123

Phosphorus—
Calcutta, 2 cs. £22

Pitch—
Genoa, 20 cks.
Marseilles, 1,143 t. 11 c.
Genoa, 1,879

Potassium Bichromate—
Samsoun, 5 c. 2 q. £8
Constantinople, 10 16

Potassium Carbonate—
Boston, 2 t. 18 c. £46
New York, 14 5 214
Cienfuegos, 6 1 10

Potassium Chlorate—
Hamburg, 2 t. 7 c. £123
Genoa, 2 94
Antwerp, 1 59
Vera Cruz, 1 10 92
Yokohama, 10 467
Hiogo, 5 226
Galveston, 6 19
Manzanillo, 6 18
N. Y., 15 691
Gothenburg, 10 25
Oporto, 1 3 53
Antwerp, 2 5
Hamburg, 4 12
Lisbon, 19 48

Potassium Sulphate—
B. Ayres, 4 c. 1 qr. £12

Prussiate of Potash—
Bilbao, 1 c. 3 q. £8

Salt—
Amsterdam, 90 t.
Antwerp, 50
Calcutta, 218
Copenhagen, 355
East London, 18
Kingston, 9
Grand Bassa, 7
Ghent, 70
Savannah, 26¾
Manoh, 23 8 c.
Monrovia, 14 14
Monte Video, 10 9
Nykjobing, 612
Portland, 100
Port Natal, 24
Rotterdam, 100
Sulymah, 23
Boston, 100
Brass, 100
Calcutta, 7,731
Cameroons, 36
Grand Bassa, 7
Halifax, 1,070
Hamburg, 7 8
Isles De Los, 34
Kingston, 5
Loango, 8
Mandyr, 13 8
Miramichi, 203
New Orleans, 539 12
New York, 100
N. Kombi, 13 8
Para, 406
Rio de Janeiro, 15
San Francisco, 70
Seville, 1
Sierra Leone, 5
Talcahuano, 2 3
Warrie, 2

Salt Cake—
Baltimore, 32 cks.
" 32
Philadelphia, 418
Portland, 26
B. Ayres, 60 dms.
Portland, Me., 20 t. 1 c.
Philadelphia, 324 18
Baltimore, 25 9
Pittsburg, 116
Philadelphia, 16 18 3

Saltpetre—
Piræus, 5 t. 5 c.

Sheep Dip—
B. Ayres, 250 drms.

Sheep Wash—
B. Ayres, 48 t. 5 c.
" 26 18
Port Natal, 6 18

Soap—
Algoa Bay, 1 cs.
Bombay, 20
Brussels, 1,200
Curacao, 350 bxs.
Hamburg, 173 cs.
Maranham, 1
Montego Bay, 100 bxs.
Oran, 50
Panama, 1 cs.
St. John's, Nfld. 100 bxs. 10 cs.
San Juan, 50
Shanghai, 10 cs.
Toronto, 400
Vera Cruz, 1
Accra, 180 bxs.
Algoa Bay, 1,202
Antwerp, 200
Axim, 30
Barbadoes, 650
Benin, 100
Bombay, 9 cks. 20 bxs.
Cabenda, 30 bxs.
Cameroons, 68
C. C. Castle, 120
Capetown, 1,100
Clarence, W.C.A., 48
Colombo, 18 cs.
Durban, 300 bxs.
East London, 1,500
Gibraltar, 350
Grand Bassa, 28
Grand Canary, 230
Hamburg, 750 bdls.
Jersey, 20 bxs.
Kurrachee, 4,342
Landana, 100
Las Palmas, 232
Loanda, 30
Malta, 20
Matadi, 6
N. Kombi, 20
Old Calabar, 1,300
Port Natal, 374
Quitta, 50
St. John's, Nfld, 145
St. Nazaire, 2,608
Santos, 24
Shanghai, 500
Sierra Leone, 530
Singapore, 15 cs.
Smyrna, 30
Teneriffe, 405
Trinidad, 1,900
Warrie, 10

Soda—
Smyrna, 100 brls.

Soda Alkali—
Buffalo, 60 brls.
Genoa, 34

Soda Ash—
Acajutla, 4 brls.
Beyrout, 150
Bombay, 6
Boston, 98 tcs. 200 bgs. 5
Buenos Ayres, 30 cks.
Hamilton, 600 bgs.
Mexico, 56 brls.
Philadelphia, 714 tcs.
Sherbrooke, 96 bgs.
Yokohama, 522 brls.
Baltimore, 658 tcs. 293 cks.
Boston, 316 tcs. 1,650 bgs. 40
Buenos Ayres, 50 brls. 71 cks.
Callao, 30
Constantinople, 30
East St. Louis, 143
Galatz, 10
Melbourne, 337
New York, 454 tcs. 654 1,4
Philadelphia, 1,320 pkgs.
Portland, 105 cks.
Porto Alegre, 75 brls.
RioGrandedoSul, 50
Rio de Janeiro, 115
" 10
Santos, 5
Sherbrooke, 105
Singapore, 59
Syra, 216
Varna, 50

Soda Crystals—
Bombay, 300 kgs.
Boston, 560 brls.
St. John's, Nfld., 10
Barcelona, 1 ck.
Boston, 384
B. Ayres, 10
Calcutta, 14
Charlotte Town, 30
Constantinople, 50
Galveston, 134
Malta, 400
Oporto, 14

Sodium Arseniate—
Boston, 5 t. 5 c £55

Sodium Biborate—
Havre, 5 t. 1 c. £152
Rotterdam, 5 17 176
Hamburg, 11 17
Antwerp, 5 6 159
Havre, 8 brls. 51 cs. 21 cks.
Antwerp, 10
Hamburg, 16

Sodium Bichromate—
Seville, 1 t. 16 c. £60

Sodium Carbonate—
Boston, 84 brls.
Charlotte Town, 3
New York, 196
Rotterdam, 50

Sodium Chlorate—
Hamburg, 1 t. £59
New York, 2 10 c. 148
New York, 50 kgs.

Sodium Hyposulphite—
B Ayres, 3 t. £24
Mexico City 1 11 c. 2 q. 11
Philadelphia, 5 2
Portland, 50 kgs.

Sodium Nitrate—
Venice, 4 t. 9 c. 2 q. £42
Santander, 1 3 10
Rio de Janeiro, 4 t 4 c. 40

Sodium Silicate—
Bundaberg, 4 brls.
Madrid, 35
Naples, 10
Savanilla, 10 dms.

Sulphur—
Toronton, 3 t. 13 c. £29
Madeira, 85 410
St. Nazaire, 800 bgs. 636
Boston, 334 260
Cordenas, 1 4 2 q. 10
Halifax, 4 1 31
Jeddah, 3 1 42

Sulphuric Acid—
Rio de Janeiro, 1 t. 2 c. 1 q. £35

Superphosphate—
Hamburg, 20 t. 3 q. £74

Tar—
Loanda, 10 brls.
Bilbao, 4 cks.

Tartaric Acid—
Carril, 2 c. £11

Zinc Chloride—
Bombay, 1 t. 16 c. 2 q. £26
Boston, 4 18 107

Zinc Sulphate—
Bombay, 4 t. 4 c. 3 q. £68

GLASGOW.

Week ending April 7th.

Bichromate of Potash—
Rouen, 224 c. £320
Genoa, 110½ 180
Antwerp, 210½ 245
Rotterdam, 12 cks. £170

Bichromate of Soda—
Rouen, 5 t. 11¾ c. £120
Genoa, 218½ 230
Rotterdam, 5 cks 40

Caustic Soda—
Argentina, 6 ts. £68

Cement—
Halifax, 12 t. 10 c. £38 19s.

Chemicals *(otherwise undescribed)*
Cape Colony, 53½ c.

Chemical Oil of Rosin—
Cape Colony, 281 c. £63

Coal Tar Pitch—
Baltimore, 238 t. 2¼ c. £340
Bordeaux, 304 13 450
Antwerp, 101 18 129

Creosote Oil—
Christiania, 30 brls. £12

Dyestuffs—
Aniline Dye
Calcutta, £44
Extracts
Boston, 94 c. £132
Logwood Extract
Halifax, £196

Epsom Salts—
Christiania, 10 t. £30

Extract of Copper—
Bordeaux, 22 t. £247

Iodine—
Rotterdam, 3 cks. £950

Linseed Oil—
Hong Kong, 40 c. £56
Calcutta, 41¾ £48 15s.

Oxalate of Potash—
Boston, 9 t. 7 c.

Painters' Colours *(otherwise undescribed)—*
Calcutta, £54
Cape Colony, 79
Straits, 61 c. 32

Paraffin Wax—
Bordeaux, 29½ c. £45 12s.

Pitch—
Genoa, 43 t. 10 c. £83

Soap —
New York, 3 t, 18½ c. £70
Cape Colony, 3 ½ 75
Boston, 27¼ 20

Soda Ash—
Baltimore, 30¼ t. £197

Varnish—
Calcutta, 6¼ c. £21

Whiting—
Bombay, 2 t. 5 c. £3

HULL.

Week ending April 2nd.

Aluminium—
Antwerp, 1 bg.

Bleaching Powder—
Boston, 223 cks.

Caustic Soda—
Amsterdam, 28 dms.
Drontheim, 15 dms.
Hango, 250
Konigsberg, 36
Revel, 30 20 cks.

Chemicals *(otherwise undescribed)*
Antwerp, 26 cs. 1 cks.
Amsterdam, 1 pkg.
Constantinople, 7
Christiania, 2 25
Copenhagen, 10 2 42
Drontheim, 2
Gothenburg, 14 24 2
Ghent, 15
Hango, 2 1
Hamburg, 132 5
Harlingen 1
Konigsberg, 20 pks.
Libau, 15 20
New York, 50 80
Odessa, 4
Revel, 80
Rouen, 7
Rotterdam, 50 cs. 1 ck. 40 pks.
Stettin, 3 71 pkgs.

Cottonseed Oil—
Antwerp, 1,972 cwts.
Copenhagen, 200
Flushing, 100
Gothenburg, 118
Hamburg, 1,002
Konigsberg, 300
Rotterdam, 3,245
Stettin, 103

Creosote—
Odessa, 1,022 cks.
Perth Amboy, 608 tns.

Dyestuffs *(otherwise undescribed)*
Antwerp, 12 dms. 3 cks.
Boston, 56 cs.
Christiania, 16 bls.
Hamburg, 2
Libau, 1 bale
Revel, 3 100
Stettin, 66 bgs.

Linseed Oil—
Amsterdam, 106 cwt.
Bergen, 267
Boston, 64
Christiania, 600
Christiansand, 10
Copenhagen, 41
Christiansund, 53
Drontheim, 201
Hamburg, 518
Rotterdam, 220
Stavenger, 17

Manure—
Ghent. 231 tns.
Hamburg, 300 bgs.

Naphtha—
Copenagen, 16 cks.

Oleine —
Amsterdam, 1 cks.
Hamburg, 26

Painters' Colours—
Antwerp, 1 cs. 67 cks. 65 dms.
Amsterdam, 5
Boston, 115 220 2 pkgs.
Christiania, 1 1 240
Christiansand, 50 pks.
Copenhagen, 31
Christiansund, 93
Drontheim, 9
Dunkirk, 1 4
Ghent, 1 2
Hango, 1
Hamburg, 1 25 2
Konigsberg, 1
New York, 230 82
Odessa, 506 3
Revel. 56
Rouen, 2
Rotterdam, 2
Stavanger, 1 9
Stettin, 83 2

Paraffin Wax—
Hango, 15 cks.

Pitch—
Antwerp, 307 tns.
Odessa, 100 cks.
St. Nazaire, 392

Soap—
Christiania, 147 cs. 36 pks.
Drontheim, 40

Tar—
Gothenburg, 50 cks.
Hamburg, 10
Odessa, 400

Tallow—
Copenhagen, 45 cks.

Varnish—
Antwerp, 1 cs. 2 dms.
Amsterdam, 1 cks.
Bremen, 2
Boston, 5
Copenhagen, 13
Drontheim, 1 3
Gothenburg, 4
Ghent, 1
Harlingen, 2
Rotterdam, 2
Stettin, 9

TYNE.

Week ending April 2nd.

Alkali—
Antwerp, 63 c. 2 q.
Odessa, 276 3
Rotterdam, 141 1

Alum—
Seville, 2 t. 3 c

Antimony—
Hamburg, 50 c.

Barytes Carbonate—
Antwerp, 425 c. 3 q.
Rouen, 1,702

Binoxide of Barium—
New York, 3 t.

Blanc Fixe—
New York, 10 t. 5 c.

Bleaching Powder—
Odessa, 303 c. 3 q.
Rotterdam, 435 1
Horsens, 10 2
Rouen, 205 1
Copenhagen, 43 t. 15 c.
,, 9 19
,, 27 17
Bergen, 4 18

Caustic Soda—
Antwerp, 367 c. 1 q.
Hamburg, 474
Christiania, 98 2
Rotterdam, 135 1
Rouen, 116
New York, 150 t. 17 c.
Seville, 42 11

Carbonate of Magnesia —
Rouen, 400 c.

Cement—
Drontheim, 16 t. 1 c.

Creosote—
Odessa, 509 brls.

Hydrate of Barytes—
Rouen, 393 c.

Hyposulphite of Soda—
New York, 10 t.

Litharge—
Odessa, 62 c. 3 q.
Rouen, 97 2
New York, 1 t. 10 c.
Seville, 1 7

Magnesia—
Antwerp, 1 c.
Hamburg, 10

Phosphorus—
Seville, 19 c.

Soda Ash—
Hamburg, 91 c. 1 q.
Odessa, 1,209 2
,, 75 1
Christiania, 397 3
Skien, 207 2
Venice, 15 t. 4 c.
Copenhagen, 2 15

Soda —
Hamburg, 80 c. 3 q.
Rotterdam, 118 3
Copenhagen, 4 t. 16 c.
Seville, 12 19

Sulphur—
Hamburg, 403 c. 2 q.
Christiania, 500
Rotterdam, 200

Sulphate of Alumina—
New York, 19 t. 16 c.

Sulphate of Barium—
New York, 1 t. 3 c.

Sulphate of Soda—
Copenhagen, 20 t. 18 c.
Seville, 21 5

Tar—
Odessa, 1,020 c. 2 q.

Varnish—
Copenhagen, 6 c.

White Lead—
Hamburg, 2 c.
Bergen, 10
New York, 5 t.

GOOLE.

Week ending March 23rd.

Chemicals *(otherwise undescribed)*
Boulogne, 2 cds.
Rotterdam, 4 cases.
,, 159

Dyestuffs *(otherwise undescribed)*
Boulogne, 2 cases.
Ghent, 1 drum.
Hamburg, 21 cds.

Manure—
Boulogne, 198 bgs.
Dunkirk, 89
Ghent, 784

GRIMSBY.

Week ending March 26th.

Chemicals *(otherwise undescribed.)*
Antwerp, 10 cds.
Dieppe, 3
Hamburg, 19 cses. 2 24 pkgs.
Rotterdam, 65 35 drms.

Coal Products—
Dieppe, 73 cds.

Dyestuffs *(otherwise undescribed)*
Dieppe, 4 cds.
,, 10 pkgs.

Farina—
Dieppe, 8 bgs.

Manure—
Hamburg, 800 bgs.

PRICES CURRENT.

WEDNESDAY, April 13th, 1892

Prepared by Higginbottom and Co., 116, Portland Street, Manchester.

The values stated are F.O.R. at maker's works, or at usual ports of shipment in U.K. The price in different localities may vary

	£	s.	d.
Acids:—			
Acetic, 25 % and 40 % .. .. per cwt.	7/- & 11/-		
,, Glacial .. .. ,,	50/-		
Arsenic, S.G., 2000° .. .. ,,	0	13	6
Fluoric .. .. per lb.	0	0	3¾
Muriatic (Tower Salts), 30° Tw. .. .. .. per bottle	0	0	10
,, (Cylinder), 30° Tw. .. .. ,,	0	3	0
Nitric 80° Tw. .. .. per lb.	0	0	2¼
Nitrous .. .. ,,	0	0	1¾
Oxalic .. .. nett ,,	0	0	3
Phosphoric, 1750° .. .. ,,	0	1	2½
Picric .. .. ,,	0	0	10¼
Sulphuric (fuming 50 %) .. .. per ton	15	10	0
,, (monohydrate) .. .. ,,	5	10	0
,, (Pyrites, 168°) .. .. ,,	3	5	0
,, (,, 150°) .. .. ,,	1	5	0
,, (free from arsenic, 145°) .. .. .. ,,	1	7	6
Sulphurous (solution) .. .. ,,	2	15	0
Tannic (pure) .. .. per lb.	0	1	2
Tartaric .. .. ,,	0	1	1
Arsenic, white powdered .. .. nett per ton	11	0	0
Alum (loose lump) .. .. ,,	5	5	0
Alumina Sulphate (pure) .. .. ,,	5	0	0
,, ,, (medium qualities) .. .. .. ,,	4	15	0
Aluminium .. .. per lb.	2s. 8d. to	0	3	2
Ammonia, ·880=28° .. .. per lb.	0	0	3
,, =24° .. .. ,,	0	0	1¾
,, Carbonate .. .. nett ,,	0	0	3¼
,, Muriate .. .. per ton	21	0	0
,, ,, (sal-ammoniac) 1st & 2nd .. per cwt.	35/- & 33/-		
,, Nitrate .. .. per ton	40	0	0
,, Phosphate .. .. per lb.	0	0	10½
,, Sulphate (grey), London .. .. .. per ton	10	7	6
,, ,, (grey), Hull .. .. ,,	10	5	0
Aniline Oil (pure .. .. per lb.	0	0	7
Aniline Salt ,, ... ,,	0	0	6½
Antimony .. .. per ton	45	10	0
,, (tartar emetic) .. .. per lb.	0	1	0
,, (golden sulphide) .. .. ,,	0	0	10
Barium Chloride .. .. per ton	7	10	0
,, Carbonate (native) .. .. ,,	3	10	0
,, Sulphate (native levigated) .. .. .. ,,	45/- to 75/-		
Bleaching Powder, 35 % .. .. nett ,,	7	10	0
,, Liquor, 7 % .. .. ,,	2	10	0
Bisulphide of Carbon .. .. ,,	11	15	0
Chromium Acetate (crystal .. .. per lb.	0	0	6
Calcium Chloride .. .. per ton	2	5	0
China Clay (at Runcorn) in bulk .. .. .. ,,	17/6 to 35/-		
Coal Tar Dyes:—			
Alizarine (artificial) 20 % .. .. per lb.	0	0	8¾
Magenta .. .. ,,	0	3	9
Coal Tar Products			
Anthracene, 30 % A, f.o.b. London .. per unit per cwt.	0	1	2½
Benzol, 90 % nominal .. .. .. per gallon	0	1	10
,, 50/90 ,, ... ,,	0	1	6
Carbolic Acid (crystallised 40°) .. .. .. per lb.	0	0	4⅞
,, (crude 60°) .. .. per gallon	0	1	2
Creosote (ordinary) .. .. ,,	0	0	1
,, (filtered for Lucigen light) .. .. ,,	0	0	2
Crude Naphtha 30 % @ 120° C. .. .. .. ,,	0	0	10
Grease Oils, 22° Tw. .. .. per ton	2	5	0
Pitch, f.o.b. Liverpool or Garston .. .. ,,	1	14	0
Solvent Naphtha, 90 % at 160° .. .. .. per gallon	0	0	11½
Coke-oven Oils (crude) .. .. ,,	0	0	3
Copper .. .. per ton	45	12	6
,, Sulphate .. .. ,,	15	10	0
,, Oxide (copper scales) .. .. ,,	45	0	0
Glycerine (crude) .. .. ,,	13	0	0
,, (distilled S.G. 1250°) .. .. ,,	45	0	0
Iodine .. .. nett, per oz.	0	0	9
Iron Sulphate (copperas) .. .. per ton	1	12	6
,, Sulphide (antimony slag) .. .. ,,	2	0	0
Lead (sheet) for cash .. .. ,,	12	5	0
,, Litharge Flake (ex ship) .. .. ,,	14	5	0
,, Acetate (white ,,) .. .. ,,	25	10	0
,, ,, (brown ,,) .. .. ,,	17	10	0
,, Carbonate (white lead) pure .. .. .. ,,	20	0	0
Nitrate .. .. ,,	20	5	0
Lime, Acetate (brown) .. .. per ton	6	2	6
,, ,, (grey) .. .. ,,	10	0	0
Magnesium (ribbon and wire) .. .. per oz.	0	2	3
,, Chloride (ex ship) .. .. per ton	2	7	6
,, Carbonate .. .. per cwt.	1	17	6
,, Hydrate .. .. per ton.	17	0	0
,, Sulphate (Epsom Salts) .. .. .. per ton	2	19	0
Manganese, Sulphate .. .. ,,	17	15	0
,, Borate .. .. per cwt.	2	15	0
,, Ore, 70 % .. .. per ton	4	5	0
Methylated Spirit, 61° O.P. .. .. per gallon	0	2	6
Naphtha (Wood), Solvent .. .. ,,	0	4	6
,, ,, Miscible, 60° O.P. .. .. .. ,,	0	4	9
Oils:—			
Cotton-seed .. .. per ton	19	10	0
Linseed .. .. ,,	20	0	0
Lubricating, Scotch, 890°—895° .. .. .. ,,	7	5	0
Petroleum, Russian .. .. per gallon	0	0	4¾
,, American .. .. ,,	0	0	5¾
Potassium (metal) .. .. per oz.	0	3	7
,, Bichromate .. .. per lb.	0	0	3½
,, Carbonate, 90% (ex ship) .. .. .. per ton	18	0	0
,, Chlorate .. .. per lb.	0	0	7
,, Cyanide, 98% .. .. ,,	0	2	2
,, Hydrate (Caustic Potash) 80/85 % .. per ton	22	10	0
,, ,, (Caustic Potash) 75/80 % .. ,,	21	0	0
,, ,, (Caustic Potash) 70/75 % .. ,,	20	15	0
,, Nitrate (refined) .. .. per cwt.	1	2	6
,, Permanganate .. .. per cwt.	3	10	0
,, Prussiate Yellow .. .. per lb.	0	0	10½
,, Sulphate, 90 % (ex ship) .. .. .. per ton	9	15	0
,, Muriate, 80 % (do.) .. .. .. ,,	7	17	6
Silver (metal) .. .. per oz.	0	3	3⅝
,, Nitrate .. .. ,,	0	2	10
Sodium (metal) .. .. per lb.	0	3	4
,, Carb. (refined Soda-ash) 48 % .. nett per ton	6	2	6
,, ,, (Caustic Soda-ash) 48 % .. ,, ,,	5	5	0
,, ,, (Carb. Soda-ash) 48% .. .. ,, ,,	5	7	6
,, ,, (Carb. Soda-ash) 58 % .. .. ,, ,,	6	5	0
,, ,, (Soda Crystals) .. .. .. ,, ,,	3	9	0
,, Acetate (ex-ship) .. .. ,,	16	15	0
,, Arseniate, 45 % .. .. ,,	10	10	0
,, Chlorate .. .. per lb.	0	0	7½
,, Borate (Borax) .. .. nett, per ton.	30	0	0
,, Bichromate .. .. per lb.	0	0	3¾
,, Hydrate (77 % Caustic Soda)(f.o.b.) nett pr. ton (10 ton lots)	11	10	0
,, ,, (74 % Caustic Soda) ,, ,, ,, (10 ton lots)	11	10	0
,, ,, (70 % Caustic Soda) ,, ,, ,, (10 ton lots)	10	10	0
,, ,, (60 % Caustic Soda) .. ,, ,, (10 ton lots)	9	7	6
,, ,, (60 % Caustic Soda, cream) (f.o.b.) ,, (10 ton lots)	9	2	6
,, Bicarbonate .. .. ,,	6	12	6
,, Hyposulphite .. .. ,,	7	15	0
,, Manganate, 25% .. .. ,,	9	0	0
,, Nitrate (95 %) ex-ship Liverpool .. .. per cwt.	0	9	9
,, Nitrite, 98 % .. .. per ton	30	0	0
,, Phosphate .. .. ,,	15	10	0
,, Prussiate .. .. per lb.	0	0	7¼
,, Silicate (glass) .. .. per ton	5	7	6
,, ,, (liquid, 100° Tw.) .. .. .. ,,	4	5	0
,, Stannate, 40 % .. .. per cwt.	3	5	0
,, Sulphate (Salt-cake) .. .. per ton.	1	17	6
,, ,, (Glauber's Salts) .. .. ,,	1	15	6
,, Sulphide .. .. ,,	7	15	0
,, Sulphite .. .. ,,	6	12	6
Strontium Hydrate, 100% .. .. ,,	8	10	0
Sulphocyanide Ammonium, 95 % .. .. per lb.	0	0	7½
,, Barium, 95 % .. .. ,,	0	0	5
,, Potassium .. .. ,,	0	0	7¼
Sulphur (Flowers) .. .. per ton.	10	0	0
,, (Roll Brimstone) .. .. ,,	7	10	0
,, Brimstone : Best Quality (nominal) .. ,,	5	5	0
Superphosphate of Lime (26 %) .. .. ,,	2	7	6
Tallow .. .. ,,	26	10	0
Tin (English Ingots) .. .. ,,	94	0	0
,, Crystals .. .. per lb.	0	0	6¼
Zinc (Spelter) .. .. per ton	22	10	0
,, Chloride (solution, 96° Tw.) .. .. .. ,,	6	10	0

THE

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THE SALE OF FERTILIZERS AND FEEDING STUFFS.

FOR a long time the necessity of restricting the sale of artificial manures and feeding stuffs has been proclaimed, so that the numerous frauds which have from time to time been disclosed may be, to a certain extent, curtailed by the aid of suitable legal measures. It is, moreover, nearly a year since the first attempt to formulate such a Bill was made.

There are, however, many points to be considered and provided for ere a Bill of a satisfactory nature can be framed, owing to the dual aspect which the matter presents. This was the rock upon which the Bill, introduced by Mr. Channing, split; for although it is right that the buyer should be protected against fraud, still there comes a point when the seller may be placed under the power of such hampering restrictions that the tables are completely turned.

Another difficulty lies in the numerous technical details which present themselves. It would be practically impossible to constitute a law which should go into all *minutiæ*; but a law which embodies the principles from and upon which the Courts of Justice can draw correct inferences and base satisfactory conclusions is what must be aimed at.

The prospects of such a measure being passed assume just now more roseate hues than they did a short time back. As it was stated in these columns recently, a committee has been formed to consider how the opposition which the Bill now in Parliament will meet with may be removed by the substitution of clauses which will protect the interests of buyer or seller alike.

The system of furnishing analyses which are intended to afford a guarantee of the purity of any particular manure or cake is a common one, and one that is commendable under certain conditions. The suggestion of compelling all manures to bear a full analysis on the outside of the sack or package is, however, going rather too far.

In the present day of small profits, profits which are even pruned still further by competition, it would be manifestly unfair to compel each maker of a patent manure or cake to publish to the whole community the exact composition of his article. As a matter of fact, we do not think such a regulation would accomplish its end, since there are different ways of expressing the composition of an artificial manure, and strenuous efforts would be made by makers to furnish an analysis which would indicate the ingredients, but in a misleading way, so as to be useless for the purposes of imitation.

As a matter of fact, it is quite possible to make a mixture for use as a fertilizer, which, as far as the chemical analysis goes, contains large percentages of useful and frequently employed fertilizing compounds, yet which by the simple process of time would deteriorate to a surprising extent. It would be a knotty point when it came to deciding whether the deterioration was of a permissible or fraudulent nature.

The way to obviate such a difficulty does not need much looking for, and the Chamber of Agriculture advise the only satisfactory method of which we know, and that is to demand an analysis which states what percentage of available fertilizing or feeding constituents each manure or cake contains. It is nothing to do with the buyer how the article he purchases has been made, or what its exact ingredients are, provided he can get value for his money. If an article is stated to contain such and such a percentage, it will be impossible for sand and weeds to be substituted for the genuine article without the buyer being able to detect such a practice, since he can approximately calculate what work he expects to get out of a manure containing a stated amount of actual fertilizing matters. Again, it would be fatal to the manufacturer to over-estimate his goods, since he knows well enough that unless his manure does work in proportion to the percentage of fertilizers which it purports to contain, he will undoubtedly do himself a permanent injury.

To carry out such a method it will be necessary to appoint chemists to control various districts, and this is a point provided for in the Bill. The only difficulty which presents itself is—how these tests of the percentages of feeding or fertilizing ingredients shall best be made. Here, now, is a chance for the agricultural colleges, which we are fortunate enough to possess, to render good and lasting service on the behalf of that portion of the populace which they are supposed to be working for. The matter is one of great importance, and it is high time steps were taken to ablegate the sluggish inactivity which has prevailed so long.

Unless special attention is paid to the matter, there is a possibility of the present attempts to frame a satisfactory law coming to a standstill because agricultural chemists are not able to devise suitable means for making the requisite analyses. Undoubtedly there are serious chemical difficulties to be faced; but we are a long way behind the Germans in the matter of agricultural chemistry, a fact which does not inspire confidence, when confronted by the knowledge that nothing much has been done so far in the majority of cases to meet this pending difficulty, while it is inevitable that something will have to be done.

Let us hope, therefore, that when the agricultural chemist is appealed to on this subject, he will be able to show something to indicate that he has been busily engaged in trying to meet the exigencies of the case, even if he has not altogether succeeded in providing for them.

COLOUR TESTING.

By C. W. Wilson.

(Continued from page 164.)

REDS.

THE article called red oxide, which is next on the list, is the brightest and strongest oxide I know of. It is practically free of all impurities. When used as an oil colour it must be thinned out to the last degree; otherwise its colour will not develop. This colour is particularly valuable for making tints with white lead, where the minimum quantity of colouring is desirable. A pound of this would turn a ton of white lead to a decidedly flesh colour. Where there is not any objection to the introduction of a large quantity of other material, then the ordinary bright Venetian red is good enough too for tinting.

Venetian, Indian, Turkey, rose lake, rose pink, and red oxide. With the exceptions of rose pink and rose lake all of these owe their colour to iron, wholly or in part. Tuscan red is an iron colour enriched with a lake colour of some kind.

The iron colours are certainly an interesting group, and iron probably gives us as much paint material as any other element, even including lead. It must be remembered that all ochres, umbers, metallic brown, etc., get their colouring from iron, and I be aggregate from all these, including the reds first named, will e lead colours. There are about 80,000 tons of lead paints use United States annually, and I am quite certain that the iron will quite equal that quantity. The census will give us some the importance of the industry, but the statistics for those paint be obtained with the same accuracy as for the lead paints.

When it is considered that the iron colours range from a li yellow through all the shades of red and brown to black, readily conclude that volumes may be written about them. I attempt to say more than a few words about each colour; only suggested as of most practical importance.

INDIAN REDS.

For these there is a well established standard. For some ye unless they would analyse 95 to 99% oxide of iron, they have classified as pure; in other words, purity means entire freed anything but iron oxide. The paler the Indian red, the gr tinting strength and the rosier the tint; the deep gives a purp in comparison. They must be perfectly fine in grinding, a give good, clean, clear tints to be of good quality.

Pure Indian red, like red oxide, must be thinned out as th can be worked to insure best colour when used by itself. If a colour be preferred for any reason, the label should state the of real Indian red present.

The Indian red used was, until quite recent years, entirely a product, the finest quality coming from Ceylon, and known so as Ceylon red; but practically all that is used at the present d artificial product, which is offered in many shades from a sca deep purple.

TUSCAN RED

is essentially a mixture of Indian red with some sort of lake The cheapest article is made from a reduced Indian red and ro The richness of such an article is very fleeting, particularly if pink be simply whiting coloured with a coal tar dye. It is that the real value of a Tuscan red lies in the permanency of colouring material employed to give it richness.

The first quality of Tuscan red to be noticed is its brilliane its opacity or body; its strength in tinting is not a very relial to its value, for a dull and low priced Tuscan red can very r of much greater staining power than a much more costly o quality of the tint, however, is a very good evidence of the q the material employed in making it.

Fineness of grinding must be insisted on, because a Tuscan when coarse, may lose its richness when ground fine; that is strength of the Indian red is fully developed.

The relative permanency may be quickly determined by out samples, exposing them for several weeks in the sun a paring them with duplicates kept in a shaded place.

There is the well-known "new" Tuscan which has not imitated either for permanency or brilliancy. The lake used the most permanent red lake colour known, it will stand a h Fahrenheit, without being materially affected, while other lake be heated up to 200° with safety. In fact the majority not o

VENETIAN RED.

We are somewhat at a loss in making tests of Venetian red what to take for a standard; in fact, it is difficult to define pu tian red.

Without a doubt the term "Venetian red" was originally a a natural colour, brought by the Venetians from the East; b the best Venetian red is made artificially from copperas. phuric acid may be driven off by a powerful heat, the iron r behind as an oxide, or colcothar; under proper conditions, a b oxide of iron may be thus obtained. Instead of dissipa sulphuric acid into the atmosphere, the copperas may be ca the presence of lime; the lime absorbs the sulphuric acid, n sulphate of lime, and the iron is mixed through it as a bright oxide. When just sufficient lime is used to absorb the sulphu the result is a pigment containing some 40% of oxide of iron.

Another class of Venetian reds is made from natural reds, times from the red cinder from burning pyrites in sulphuric ac facture. This natural red or red cinder is ground with gypsum other white mineral, barytes being not infrequently used. T of reds can readily be prepared with a much larger percentage of iron at less cost than the first described, but almost invari are very dull in comparison. They do not grind kindly in the are harsh in working; and, in spite of the larger contents of not so good in all round paint as the furnaced articles.

All reds with a sulphate of lime base are good oil carrie when low cost of production is the prime object of the paint gr will buy a strong red and reduce it with barytes, because in he secures the least proportion of oil in the paste, and the oil r

costly element. Personally, I believe the best Venetian red is
ch consists of oxide of iron and sulphate of lime only, and one
inent authority, after a number of experiments, has expressed
opinion; however, he places the requisite percentage of oxide
igher than in the ordinary Venetian red I have described. If
epted that Venetian red should consist of oxide of iron and
of lime only, then barytes is an adulterant when used. If the
finition as first given be accepted, then it is impossible to find
erated Venetian red so long as the colouring principle be oxide

standard, we will take the 20% red. This red when properly
is opaque enough to cover well; carrying a large quantity of
reads out well, and, therefore, is an economical paint. Its
and working are soon determined by actual use. In testing,
ourse, must know that our standard is what we intend it to be.
sample is essentially the same shade and as bright as your
, the strength test practically determines whether or not iron
present in proper quantity; and while a chemist's analysis is
y to determine definitely the character of the base, yet the
of barytes in large quantity may be determined by a compari-
ulk.
righter the oxide of iron, the more valuable it is, and, there-
lative brightness must always be taken into account. This
ly affects the tint with white lead. The lively clear tint
s the good red; the dull tint indicates the poorer red.
ess of grinding is determined in the usual manner. Body tests
nade by the pressure method.

VERMILION.

ican vermilion is not used to any great extent by the house
It is simply a deep orange chrome in a crystalline form. I
e a little of the dry colour, place it on a piece of glass, and
palette knife rub it out to a fine powder, and its depth and
y disappear. The deeper the shade, the larger the crystal,
he pale shade will have the more body as I have said. This
s not used to any great extent by the house painter, but what
use should be of the very best quality and strictly pure; while
liant, it is the most reliable of all the vermilion reds for per-
y.
other vermilion red on this list is the imitation of quicksilver
on. This primarily is orange mineral or red lead, coloured with
ar dye known as eosine. The best type is that which is simply
nge mineral, strongly coloured. This type shows a scarlet shade,
hold good colour the longest. The crimson shades are very
il, but comparatively fleeting. The crimson tone is due to the
ction of white lead, zinc white, sulphate of lead, etc. The
grades are made with red lead and barytes. Those that are
rom fine orange mineral only, have good body and work well,
ep soft in oil much longer than when made with red lead; in
ords, red lead in oil will set much more quickly than orange
l.
e the statement is true more or less for the testing of all
, it is particularly true of vermilion reds, that without a known
d for comparison it is difficult to make any correct estimate of

n barytes or any other material without tinting power is sub-
for the orange mineral, without any reduction in the quantity
e, the red will have greater power of staining white lead. In
e the strength of tint is rather an indication of inferiority than
ise.
imitation vermilion or any colour containing a large quantity of
de of lead is immediately turned brown by contact with nitric
This converts the red oxide to the brown oxide. This test was
or both red lead and imitation vermilion.

RED LEAD.

lead is a quite important pigment now, and promises to be more
rchitects and engineers and all interested in structural iron work
most unanimously decided that pure lead is the proper first coat
, and it is now being generally specified. It is the very best
preservative that can be applied in the shape of paint. Red
ill saponify oil very quickly and therefore it must be freshly pre-
for use. Many mix the dry lead with oil as they use it, but this
satisfactory, nor will the small hand mill of the shop grind it
torily, though it is better to run it through such a mill than not
d it at all. Engineers almost unanimously insist on the use of
e article. Recently a large order was prepared under specifica-
half red lead and half whiting.
not think this is a good mixture for the purpose, certainly the
badly sacrificed, and not over one-fourth the quantity of red
he real preservative, would be applied to the surface as when the
rticle is used, and such a specification would largely defeat the
e of the use of red lead. Over this priming coat any colour may
lied. One of the most useful second coats for preservative pur-
poses would be a mixture, say of equal parts by weight, of red lead and a good iron oxide paint, such as a well prepared metallic brown. Over this second coat any finishing colour could safely be applied. If such work scales, it will be only in those places which were not thoroughly cleaned of rust before painting.

When a painter has a large job to do with red lead, he should have it ground for him by the manufacturer in such quantity as he would use up in two or three days; it should be well ground in a thin paste, say about 20 lbs. oil to every 100 lbs. red lead. This plan is now followed by contractors for painting large iron structures.

(To be continued.)

THE PREPARATION OF RED PIGMENTS FROM SLAG.

THE use of basic Bessemer slags for manuring purposes has long been known, but the slags from puddling and reheating furnaces have hitherto, on account of their composition, only found use as a low priced ore. Mr. A. Sahlin has described a method, in a paper recently published by himself, by which these low class slags may be utilized as paint stock, and their value greatly increased. The chief difficulty lies in reducing the slags to a sufficiently fine state of division. This end is accomplished, however, by the joint aid of the Blake Crusher and the Cyclone Pulverizer. As the result of this treatment about forty per cent. of the slag is obtained in a state in which it can be directly worked up as a pigment with linseed oil. The remaining sixty per cent. of coarser ore still remains to be dealt with, however. This portion is found to be capable of being converted into a pigment suitable for producing the dark shades of red paint, such as used by various railway companies for preserving rolling stock.

To effect this conversion the following method is adopted:—1,000 lbs. of the ground slag, having a fineness of about 225 mesh. are mixed with from 170 to 200 lbs. of 66° B. sulphuric acid (sp. gr., 1·83). The quantity of acid is governed by the shade desired in the finished product. The mixing is done first by hand and then in a chaser mill. When thoroughly mixed the slag is put away in a bin to "sweat." The chemical reaction is manifested by a rise in temperature to from 240° to 250° Fahr.

The slag consists mainly of silicate of protoxide of iron, and the sulphuric acid naturally expels the weaker silicic acid, forming a sulphate of protoxide of iron. If roasted with admission of air, this sulphate is dissociated into free sesquioxide of iron and sulphurous acid, which latter is drawn off.

The sweating occupies about four days, and is accompanied by the escape of steam and a greenish discolouration of the slag. When reaction ceases, 500 lbs. of the mass are charged into each retort of a calcining furnace. This furnace is fired with crude oil, air for combustion being supplied under pressure by a Baker blower. The retorts are heated to cherry-red, and the slag while being roasted is agitated so as to bring it in contact with the air necessary for rapid oxidation. At the end of from three to four hours the heavy dark slag has changed into a light, flakey, red mass, that is somewhat pasty. When the litmus-paper test shows that the acid is entirely evaporated, the slag is cooled down and passed through a Cyclone Pulverizer. The only difference in the grinding is, that the whole product is now reduced fine enough for the highest grade of paint, thus leaving no second residue. The pulverizer reduces about 800 pounds of calcined slag per hour, producing an excellent paint stock varying in its depth of shade at the will of the operator, according to the amount of sulphuric acid employed in the preliminary treatment.

ANALYSIS OF BANCA TIN.

THE following is an analysis of metallic tin made from the alluvial or stream tin deposits of the island of Banca, off the coast of Sumatra. This is the purest tin produced. That of Cornwall carries considerable arsenic, and that from other deposits more lead, copper and iron than the Banca. The Banca mines are worked by a Dutch company, which is under government control, something as the old East India Company was under British direction.

ANALYSIS OF BANCA TIN.

Tin	99·961
Iron	00·019
Lead	00·014
Copper	00·006
	100·000

THE INFLUENCE OF AIR AND ITS IMPURITIES ON THE ILLUMINATING POWER OF FLAMES.

By Dr. Bunte.

During recent years it has frequently been observed that the illuminating power of flames, both of candles and of gas, is markedly influenced by the state of vitiation of the atmosphere, whether due to the amount of carbonic acid or water vapour present or to the diminution of its oxygen. I published last year some observations on this subject, from which it appeared that a flame is extinguished in a globe when the proportion of carbonic acid in the air reaches 6%, such air, although containing 11% of oxygen, being unable to support combustion. It would naturally follow that a much slighter degree of vitiation, such as might arise from the combustion of flames or from respiration, would also exert a perceptible influence on the illuminating power of flames, a circumstance which has indeed been already ascertained by photometric experiments. As we have hitherto had no accurate measurements of this effect, I have had a series of experiments carried out by my assistant, M. Burschell, under my direction. The most general vitiation of the air arises from variations in the amount of carbonic acid and water vapour present, but the way in which the vitiation is produced must also be taken into account.

Carbonic acid may simply be mixed with the air without disturbing the proportion between oxygen and nitrogen (21 vols of oxygen to 79 of nitrogen), or again it may be produced at the expense of the oxygen. The same thing is true of aqueous vapour, which may be simply derived from evaporation, or from the combustion of substances containing hydrogen, in which case its presence is accompanied by a diminution in the amount of oxygen

Usually the vitiation of the air is produced by combustion or respiration, in which water vapour and carbonic acid are simultaneously produced, their formation being accompanied by a diminution in the amount of oxygen present. In studying the influence of vitiation on the illuminating power of flames, therefore, it is necessary to examine the effect of each substance separately, and we have consequently made experiments both by mixing the air with carbonic acid and water vapour, and by producing these substances simultaneously, the amount of oxygen present being correspondingly lowered.

Among illuminating flames we first tried gas flames, using the bat's-wing and Argand burners, as being the most widely used. We afterwards made some experiments with the Hefner lamp, which presents special difficulties, because accompanying the diminution of illuminating power there is a modification of the conditions of combustion, shown by a change in the height of the flame. With candles the phenomena are still more complex, because the vitiation of the air not only acts upon the illuminating power, but also on the vaporization of the substance which determines the formation of the flame, so that no exact measurements can be obtained. Since the illuminating power of candles is very variable, even when the composition of the air remains constant, we have not extended our experiments in this direction.

The arrangement adopted is very simple :— two flames are used, one at each end of the photometric scale ; one is the standard flame, burning freely in pure air, and the other the experimental flame placed in an atmosphere which can be varied at will. For this purpose the latter flame is enclosed in a large cylinder of glass 1·2 metres in height and 0·33 metres in diameter. The cylinder is closed above and below by iron plates, provided with openings for the entrance of air and the exit of the products of combustion. The area of these openings can easily be calculated so as to have the flame burning under the same conditions as in the open air, the ventilation being just sufficient to remove the products of combustion. This is tested by arranging the flame in the open air to burn just as brightly as the standard, and then placing the cylinder over it and again comparing the brightness ; only a very slight difference is produced. This is due to the fact that the light absorbed by the one wall of the cylinder is almost exactly compensated by that reflected from the other. Before each operation we have determined the illuminating power of the flame submitted to the experiment, burning in the open air and in the cylinder, comparing it with the standard so as to eliminate the differences due to reflexion and absorption. In order to feed the flame burning in the cylinder with air of varied composition, a large side tube was arranged in the lower iron fastening, into which the vitiating substances, water vapour, and carbonic acid were directed, and thus penetrated with the air into the cylinder. To render the mixture as complete as possible, four discs were arranged at intervals of two centimetres at the bottom of the cylinders, out of which segments had been cut, so that the perforation of one disc came immediately below the unperforated portion of the higher one, and the current of gas was thus several times interrupted, and consequently a thorough mixture obtained. The *composition* of the air feeding the experimental flame was determined in each case by a special analysis. For this purpose a glass tube was arranged so as to end about 3 cm. below the burner, *i.e.*, in close proximity to the flame, and through this could be aspirated at any moment a given air to be tested for carbonic acid and water vapour : the a these substances were found by weighing absorption tubes c calcium chloride and soda lime, the amount of oxygen cou found, so that the exact composition of the air feeding the fl be ascertained.

The method adopted in the various experiments was as f First of all the il uminating power of the standard flame, passing through a delicate membrane regulator, was measu photometer, and then that of the experimental flame burn open air and supplied by gas from the same system of pipes. these two flames were arranged so as to consume about amount of gas, and to give the same amount of light (100 second of gas and 10 Hefner units of light). The cylinde placed over the experimental flame and the illuminating po taken ; as mentioned above this did not differ appreciably former determination. A current of carbonic acid was ther the air supply from a receiver and the flame allowed to constant illuminating power.

The actual measurement begins at this point and lasts fo hour or an hour and a half. Throughout this time the con maintained without variation, this being proved by pl measurements taken every five minutes, and which should constant. At the same time a sample of the air amounting t is aspirated away and tested for water vapour and carbonic a experiment finished, the supply of impurities is cut off so as gas burn in pure air again, and the illuminating power rapidly until it has arrived at its former value, the cylinder is then and the illuminating power again measured

Influence of water vapour.—To determine the effect of m amount of water vapour present in the air in the cylinde mined by a delicate hygrometer. This showed about 40% humidity at 1·° C. (corresponding to 0·72 vols. per cent. of wat The illuminating power of the flame was then taken and wa introduced into the air feeding the flame by passing a air through boiling water and into the cylinder. The hu to 60% and even 80% (corresponding to 2·3 vols. of H_2O) w sensible diminution of illuminating power, at 90% (24° C.) tion of about 12% was observed, a thick mist being formed cylinder. Compared with the action of carbonic acid, th vapour is very slight. Without considering this experime plete, we have thought ourselves justified in neglecting th present in the air supply in the following experiments.

Influence of the carbonic acid.—Circumstances alter whe acid is added to the air, the experiments being carried out a above. A constant current of carbonic acid was passe cylinder, and the amount of carbonic acid determined corres each diminution in illuminating power. The results of th experiments made both with bat's wing and Argand burner in Table I.

As appears from this the experiments have been made for carbonic acid varying from 1·5% ; this proportion is rela high, and even the lower limit of 1% is rarely reached i dwellings on the surface of the ground. Notwithstanding experimental difficulties and the uncertainty of photometr rendered it necessary to first of all determine the effects between these wide limits, so as to have some idea of the v small variations observed in the comparison of photometric

Table I.

	Carbonic acid in air, per cent.	Illuminating power. In % of original	Di Il
Bat's wing burner	0·0 ..	100 ..	
1 ..	1·10 ..	92·8	
2 ..	1·77 ..	86·4 ..	
3 ...	2·15 ..	81·7 ..	
4 ..	2·88 ..	74·7 ..	
5 ..	3·73 ..	71·1 ..	
6 ..	4·44 ..	68 8 ..	
7 ..	5·11 ..	63·4 ..	
Argand burner ..	0 0 ..	100 ..	
1 ..	2·24 ..	87·6 ..	
2 ..	2·94 ..	84·1 ..	
3 ..	3·87 ..	78·0 ..	
4 ..	4·37 ..	74·3 ..	

The superior limit was obtained by vitiating the air until would no longer burn regularly, and it became impossible t their illuminating power with certainty.

We also made some experiments with the Hefner lam the effect of carbonic acid in the air. Owing to the feeble i power of these lamps, the photometric bench had to be mu otherwise the Hefner lamp simply replaced the gas flame in t

r the flame had burnt for some time in the enclosed space of the :r, the temperature was found to have risen. This had no effect ;er on the gas flame, whilst the Hefner flame grew longer, owing increased evaporation of the amyl acetate. Inversely, as soon carbonic acid was added, the flame grew shorter, the heat pro- being less and the evaporation of the amyl acetate being probably ondingly diminished. When the stream of carbonic acid was pted, the flame again increased in height. As it was impossible d these oscillations in our experiments, we measured the height flame on each occasion, and calculated the illuminating power for e of 40 mm., by means of the correction formulated by thal (Journal fur Gasbeleuchtung, 1888, 583), *i.e.*, + 3% per eight of flame. In some experiments in which the proportion onic acid was very high, the height of the flame diminished to . Since the method of correction can scarcely be expected to oncordant results within such wide limits, no great accuracy is d for the result.

ng to the difficulties just explained, we have also limited our nents on the Hefner lamp to this series. In view of the fact e Hefner lamp is used as a normal unit for the comparison of ating power, there would, nevertheless, be some interest in a detailed examination of this question.

TABLE II.

Per cent. of Carbonic Acid.		Illuminating power.	Diminution of power.
		In % of original power.	
0 ..	0 ..	100 ..	—
1 ..	1·24 ..	89·2 ..	10·8
2 ..	1·40 ..	88·2 ..	11·8
3 ..	2·98 ..	80·1 ..	19·9
4 ..	3·35 ..	77·3 ..	22·7
5 ..	3·42 ..	75·0 ..	25·0
6 ..	3·53 ..	65·0 ..	35·0

hus appears that the Hefner, under the conditions of these nents, is so greatly influenced by 3·5% of carbonic acid as to photometric measurements almost impossible. This sensitive- reater than that of gas flames, is probably due, at least in part, fact that, the heat being less, the supply of air is also less than gas flame; and there is no doubt that this is the reason of the fall in illuminating power when more than 3·5% of carbonic present.

uence of the diminution of oxygen.—We have seen, at the com- ment of this article, that increase of carbonic acid and water almost always coincides with diminution of oxygen, and the ination of the effect of variations in this direction was, there- f great importance.

the experiments described have shown that the vapour of has only a very slight effect on illuminating power, the oxygen air supply can be diminished by the very simple means of burn- mall jet of hydrogen in it. For this purpose, a burner fed by gen was placed before the tube by which air was supplied to the r. The height of this flame gave an approximate measure of nount of oxygen consumed, and since the flame could be easily ted, the amount of oxygen in the air supply could be corres- gly varied. The exact determination of the diminution of oxygen ade, as in the previous experiments, by aspirating away some of , and determining its humidity. The difference between this e humidity of the air before entering the cylinder gave the t of moisture added by the hydrogen flame, and consequently minution of oxygen. The observations made in this manner, ith the bat's wing and Argand burners, are given in table III.

TABLE III.

Diminution of oxygen in % of total vol. of air.		Illuminating power.	Diminution of power.
		In % of original power.	
Wing Burner.			
0 ..	0 ..	100 ..	—
1 ..	0·40 ..	94·8 ..	5·2
2 ..	0·49 ..	90·2 ..	9·8
3 ..	0·58 ..	86·3 ..	13·7
4 ..	0·70 ..	82·9 ..	17·1
5 ..	0·94 ..	79·6 ..	20·4
6 ..	1·21 ..	71·2 ..	28·8
7 ..	1·34 ..	69·6 ..	30·4
l burner.			
1 ..	0·51 ..	93·0 ..	7·0
2 ..	0·71 ..	89·3 ..	10·7
3 ..	1·06 ..	85·7 ..	14·3
4 ..	1·45 ..	76·5 ..	23·5
5 ..	1·56 ..	73·5 ..	26·5
6 ..	1·70 ..	67·6 ..	32·4

The water vapour present plays a certain part in the results here given, but does not seem to be of great importance. An exact determination of its effect must be reserved for a special series of experiments.

Influence of the Products of Combustion of Illuminating Gas.—A third set of experiments has been devoted to studying the behaviour of a flame supplied by air more or less vitiated by the products of combustion of coal gas itself. The arrangement of the experiment was quite similar to that in the last series, a gas flame being substituted for that of hydrogen. The height of this flame served as an approximate measure of the vitiation of the air. The alteration in the composition of the air was found by determining the carbonic acid and moisture in a sample. It must of course be borne in mind that in addition to these two factors we have the third of diminution of the amount of oxygen. Notwithstanding this, as the vitiation of air by combustion and respiration is generally measured by the amount of carbonic acid present, the results of these experiments have been referred, in the following table, to the amount of carbonic acid present in the air supply.

TABLE IV.

	Carbonic acid in air in %.	Illuminating power.	Diminution of power.
		In % of original power in normal atmosphere.	
Bat's Wing.			
1 ..	0·26 ..	94·3 ..	5·7
2 ..	0·41 ..	90·6 ..	9·4
3 ..	0·49 ..	87·5 ..	12·5
4 ..	0·54 ..	85 0 ..	15·0
5 ..	0 60 ..	81·7 ..	18·3
6 ..	0·65 ..	80·0 ..	20 0
Argand.			
1 ..	0·18 ..	96·5 ..	3·5
2 ..	0·25 ..	93·7 ..	6·3
3 ..	0·37 ..	84·5 ..	15·5
4 ..	0·43 ..	82·8 ..	17·2
5 ..	0·56 ..	79·7 ..	20·3
6 ..	0·68 ..	77·3 ..	22·7

It follows that a relatively small proportion of carbonic acid, such as might easily be met with in closed rooms, badly ventilated, produces a comparatively large diminution in the illuminating power of a flame, capable of influencing accurate photometric determinations.

When curves are traced from the numbers in Tables 1, 3 and 4, it appears that the vitiation of the air by the products of combustion produces the greatest effect, second in order is the diminution of the amount of oxygen. Carbonic acid may be introduced to a considerable extent without producing much effect. The two kinds of burners do not behave in the same manner. The bat's wing resists carbonic acid alone better than the Argand, whilst this order is reversed with regard to the lowering of the proportion of oxygen in the air and to the pressure of products of combustion in the air.

If the specific effects of carbonic acid and water vapour be for the moment neglected, and if we look upon these gases simply as indifferent substanees, the variation in the composition of the air will appear simply as a dilution, by means of which the proportion of oxygen present is diminished. This proportion of oxygen can easily be calculated from the numbers already given, and may serve as the sole measure of the change. In short, if carbonic acid and water acted purely as diluents without any specific action like the nitrogen of the air, then in every case an equal diminution of oxygen would correspond to an equal diminution of illuminating power. It appears, however, from an examination of the actual figures that this is by no means the case. It is not indifferent whether the diminution is produced by the addition of carbonic acid, or of water vapour, or of both at the expense of the oxygen, but each of these means of dilution produces a special effect. This effect, calculated for the same proportion of oxygen in the gaseous mixture is greatest for the addition of carbonic acid, less for the vitiation by products of combustion, and still less for the diminution of the oxygen by the combustion of hydrogen. This confirms the statement made above, that the effect of water vapour is relatively small. These observations, the first in a new line of investigation, are still affected by uncertainties; they suggest numerous questions and considerations which I cannot at present follow up, although I hope to return to them at a later period.—*Jour. de l'Eclairage au Gaz.*

THE SCIENTIFIC SOCIETY OF BUCHAREST.—We are pleased to acknowledge another copy of the Bulletin of the Bucharest Physical and Scientific Society. The number contains articles of interest upon the determination of the mechanical equivalent of heat, and also upon the iodide of phenyl-penta chloride. The greater part of this number which covers both March and April, is devoted to the proceedings of the commission at Paris, upon the nomenclature of organic compounds. There are also a number of meteorological observations, and a communication upon the atmospheric pressure at Bucharest.

Legal Intelligence.

SUPREME COURT OF JUDICATURE.

COURT OF APPEAL.

(Before Lords Justices Lindley, Bowen, and Kay.)

IN RE THE NATIONAL PURE WATER ENGINEERING COMPANY (LIMITED)—FOLLETT'S CASE.

THIS was an appeal from an order of Mr. Justice Stirling, made in chambers on February 13th last, dismissing an application by Colonel Follett, a contributory of the above named company, that his name might be struck off the list of contributories, or, in the alternative that his name might be placed on the said list for 336 fully paid-up shares only. In 1886 Colonel Follett was the holder of 320 fully paid-up shares of £5. each in the Atkins Filter and Engineering Company (Limited). In that year an agreement was come to between the filter company and a new company, which was then called the Consumers' Economic Water Softening and Purifying Company, but which subsequently changed its name to the National Pure Water Engineering Company, that some part of the business of the filter company should be carried on by the new company and that such of the shareholders of the filter company as desired to join the new company should be at liberty to do so upon the terms of surrendering three-fourths of their holding and receiving in exchange therefor fully paid-up shares in the new company at the rate of 140 shares for every 100 shares so surrendered. That agreement was never registered, as required by section 25 of the Companies Act, 1867. Under these circumstances Alfred Smith, who was secretary of both companies, on the 27th of June, 1888, wrote a letter addressed from the offices of the filter company to Colonel Follett to the following effect:—"Referring to the arrangement for exchanging a certain proportion of shares in this company for shares in the National Pure Water Engineering Company (Limited), I have the pleasure to enclose herewith transfer forms, and shall feel obliged if you will kindly return them duly signed and witnessed, and also your share certificate or certificates for shares in this company." The transfer purported to transfer "336 shares, £5. each fully paid, numbered 1,161 to 1,496, of, and in the under-taking called the National Pure Water Engineering Company (Limited;" and in the margin of the transfer were the following words:—"Coupon for £1,680. stock forwarded to the company's office by A. Smith, secretary, the National Pure Water Engineering Company (Limited)."—Colonel Follett duly signed and returned this transfer to Mr. Smith, and sent him his certificates of his fully paid-up shares in the filter company. The transfer was dated the 28th of September, 1888. A month later—viz., on the 31st of October, 1888—Colonel Follett received another letter from the filter company enclosing a certificate, dated the 29th of October, of fully paid-up shares in the water company. The water company got into difficulties, and in June, 1889, it was ordered to be wound up, and the liquidator placed Colonel Follett's name on the list of contributories in respect of these 336 shares. Colonel Follett's case was that he had only agreed to accept fully paid-up shares, and that the company were estopped from saying that the shares were not fully paid up. Mr. Justice Stirling held that Colonel Follett's name was properly settled on the list of contributories. Colonel Follett appealed from this decision.

Mr. Crackanthorpe Q.C., was for the appellant; Mr. Buckley, Q.C., and Mr. Grosvenor Woods were for the official liquidator.

The COURT, without hearing counsel for the respondent dismissed the appeal.

LORD JUSTICE LINDLEY said that this was a very hard case on Colonel Follett, but, unfortunately, many of these cases were very hard. It was said on behalf of Colonel Follett that, though it was true that these shares were not fully paid up in cash, it was not competent for the company or the liquidator to take advantage of that; but it was impossible to get out of the 25th section of the Companies Act, 1867, which provided that every share in any company should be deemed and taken to have been issued and to be held subject to the payment of the whole amount thereof in cash unless the same should have been otherwise determined by a contract duly made in writing and filed with the Registrar of Joint-stock Companies at or before the issue of the shares. Therefore, Colonel Follett having taken these shares, and not being now in a position to repudiate them, by reason of the company being wound up, there was imposed upon him the obligation of paying those shares up in cash. It was contended that the company was estopped from denying that the shares were paid up, but, although the certificate said that the shares were fully paid, Colonel Follett knew perfectly well that that was untrue. He probably thought that everything had been done which ought to have been done; but, not knowing much about Acts of Parliament, he did not inquire whether these shares, though not paid up, could be treated as paid up. "Burkinshaw *v.* Nicolls," L. R. 3, App. Cas., 1,004, which had been relied on, had no application to a case like this, because Colonel Follett knew that the representation on the face of the certificate was not true. In principle, this case was governed by the "Celluloid case," L. R. 39, Ch. D. There, as here, the unfortunate shareholder got a certificate stating that the shares had been paid up, but there, as here, he knew that it was not true. It was there argued that the effect of the certificate was the same as if it had contained a representation that there had been a duly-registered contract. But that was not, in fact, the representation, and that argument did not prevail. Whether, if a certificate did contain such a representation it would have the effect of evading the provisions of section 25 was at least doubtful, and his Lordship desired to leave that point open.

LORD JUSTICE BOWEN, in concurring, observed that the certificate was dated in October, and the transfer in September, and it was difficult to see how the certificate could act as an estoppel as between the company and the transfer or in regard to shares which had been transferred a month before. But, assuming that difficulty to be removed, the case was not distinguishable from the "Celluloid case."

LORD JUSTICE KAY concurred.

Reports of Companies.

DIVIDENDS.

SANTA RITA NITRATE CO., LTD.—The Directors of the Santa Rita Nitrate Company, Limited, have decided to pay an interim dividend of 5s. per share on account of the profits of the current financial year.

MESSRS. F. BAYER AND CO.—The balance-sheet of the F. Bayer and Co. Dye Manufacturing Company, of Elberfeld, for 1891, shows a gross profit of £112,500., as against £123,886. for 1890. A dividend at the rate of 18 per cent. for the year is proposed, as against 17 per cent. for 1890, the appropriations to the several accounts being considerably less for 1891 than for 1890.

THE LANTARO AND SANTA LUISA NITRATE COMPANIES.

An extraordinary general meeting of the Lantaro Nitrate Company, Limited, was held last week at Winchester-house, London. There was but a small attendance, and the proceedings were brief. Mr. H. A. Lan, chairman of the company presided. The meeting was called for the purpose of submitting for confirmation resolutions passed at a previous meeting. These included the proposed amalgamation of this company with the Santa Luisa Nitrate Company by the purchase of the latter's property, a project involving an increase of the capital to £550,000. by the creation of 25,000 new shares of £10. each. The amalgamation was adopted, the same being approved of at a subsequent meeting of the Santa Luisa Nitrate Co.

THE FAILURE OF THE DEE OIL COMPANY.

Mr. William C. Deeley writes as follows regarding the statement that the books of the company had mysteriously disappeared:—Is it fair or just to publish an *ex parte* statement without knowing the facts of the case? The report states that out of seven directors (there are only three named) summoned to attend, only one put in an appearance. This is absolutely untrue, and such a statement could not, I venture to say, have been made by the assistant official receiver, Mr. Wheeler, the fact being that although the directors were originally summoned for the 6th inst., they had each and every one received a second notice not to attend, as the meeting was postponed. Sir John Stokes attended by accident. He having only just returned from the continent, had not received the second notice, which had been addressed to his country seat. In proof of all this you can see the official documents, as I have lodged them with Messrs. Walker, Smith, and Way, solicitors, Chester. Then, as regards the statement respecting the books. Here again I say there is a gross misstatement. The particular books in question the directors had never been asked for, whilst I arranged on the 1st inst., when specially summoned to London on this particular question, to send these books forward, and they have been so sent. As a matter of fact, the business of the company has not been stopped, and the debenture holders made from 3rd February, 1891, to 6th February, 1892, a net profit of over 8 per cent., and are now dividing and receiving 4 per cent. of this, leaving the balance as further working capital.

MESSRS. MASON AND BARRY.

respect to the passing of the dividend on Mason and Barry the secretary writes as follows:—"I am instructed to ou that having held a Board meeting last Monday week for the of considering the working accounts for the year 1891, and iting off, as usual, the sum of £36,929. and placing to the La Sabina shares sinking fund the sum of £1,000., the s regret that in consequence of the very restricted make of recipitate, caused by the shortness of water supply referred to terim report issued in October last, the small balance of profit allow of the payment of any further dividend for the year 1891. nfall required to bring up the year's production of copper te to our normal make did not set in until the last month of ; but the Directors are glad to be able to add that the mine reservoirs are now quite full. I also beg to draw your special to the accompanying circular and notice calling an extra- general meeting of the shareholders, to be held on Monday, next. The Directors' report and general balance-sheet will as soon as the audit of the latter has been completed." The referred to says:—The reasons which have induced the s to propose the reconstruction of the Company will be d to the shareholders at the meeting. The practical results the reconstruction will be as follow:—The payment of a sum per share in cash, to expunge from future balance-sheets the odwill and leases," and thus set free for dividend the sum of ., which has hitherto been regarded as a first charge on the rofits of the Company in reduction of that item. Each share- will receive in exchange for every share held in the present y, having a nominal capital of £2,100,000. divided into 210,000 £10. each, a fully paid-up share of £5. in the new Company, nominal capital of £1,050,000. divided into 210,000 shares of h. The reconstruction of the Company will not cause any tion in the carrying on of the Company's business.

THARSIS SULPHUR AND COPPER COMPANY, LIMITED.

annual meeting of the Tharsis Sulphur and Copper Company, held in Glasgow on Wednesday, the 20th inst., Sir Charles , in moving the adoption of the report, which recommended ad at the rate of 12½ per cent., against 22½ per cent. for the year, said the great reduction was due not to any falling off quantity or quality of their products, or to increased costs the mines or in metal works, but to the fall in their market Speaking generally, the dividend had fluctuated very much price of copper, and copper from a variety of causes had of late years a very speculative article of commerce. The y's stocks at the end of the year became exceptionally large, had to take them into their balance at about £10. per ton 90. A very disturbing element in values had been the intro- of refined copper from America. They had further to face a ½d. per unit, or 2s. per ton on sulphur, nearly 1s. per ton on owing to the stoppage of the blast furnaces in their neighbour- d a gradual decline in the value of silver. The result was y had a falling off in net profit of, in round numbers, ., which accounted completely if not satisfactorily for the on of dividend. The profits on gold and silver, notwithstand- all in silver, were about the same as those of the previous year, not unsatisfactory. As to the future, he said the output for nt year was likely to be maintained, but the price likely to be was a difficult question. The future depended chiefly on the sent from America, whose power of production was great. d fair to conclude that the low prices of the last year were not tive to their mines, as there were proposals from them to ir production and export on certain conditions, with a view to about an advance. Whether they would succeed in coming to ssary agreement remained to be seen. Meantime the market a rather more active at a slight advance in prices, and they pe that this improvement might continue. The report was

NOTICE.

LONDON AGENTS.

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Selected Correspondence.

THE ATMOSPHERE OF MANCHESTER.

To the Editor of the Manchester Guardian.

Sir,—On Thursday night the 14th inst., we had what one might call an angry driving storm of snow from the north-west. In a very few minutes the gardens were all covered with a snow-white mantle which one would have thought by its whiteness no earth stain had defiled. During the last snow fall I analysed samples of snow from various places in and around Manchester, but they one and all contained sooty matter—owing, as I thought, to the samples not having been collected immediately at the fall. Therefore on Thursday night I collected samples from my garden on The Cliff immediately after the fall, great care being taken only to collect the upper surface, and not in any case to take it from the earth. The samples were put into clean wide-mouthed stoppered glass bottles. In the morning when the snow was melted, instead of a clear crystal Alpine liquid being obtained, it had the appearance as if a sweep had washed himself therein. This snow water was analysed, and gave in one million parts—

Free acid calculated as sulphuric acid	10·60
Total ammonia	16·21
Chlorine as chlorides	6·24

This gives some little idea of the destructive activity of the Manchester atmosphere. Some who read this will jump to the conclusion that all this free acid must be belched forth from the chimneys of chemical works. Though, perhaps, the manufacturing chemists of Manchester may be great sinners, yet in this instance they are blameless, for this acid snow came not from but to Manchester; and as a contrast I cannot do better than give you the analysis of the snow which I obtained from the outside of Mr. Levinstein's works at Blackley on March 12, and which snow had been lying on the ground for three or four days absorbing any acid or other deleterious vapours:—

	In one million parts.
Free acid	nil.
Total ammonia	2·12
Chlorine as chlorides	6·52
Combined sulphuric acid	3·21

In justice I am bound to admit that I have found the atmosphere at Blackley more free from acidity than other parts of Manchester.

I am, &c.,

J. CARTER BELL, County Analyst.

The Cliff, Higher Broughton.

Official Memoranda.

(From the Board of Trade Journal.)

THE INDUSTRIES OF GREECE.

THE following particulars respecting Greek industries are extracted from a recent report of the Austro-Hungarian Consul at Athens:—

The hopeful expectations arising out of the commercial prosperity of Greece in 1889 can hardly be said to have been realised in 1890, but as yet it is impossible to say how far this may be due to circumstances of a temporary character. The weight of the principal crops produced in 1890 was as follows: wheat, 163,332 cwt.; barley, 54,116 cwt.; maize, 79,127 cwt.; mixed corn, 11,114 cwt.; peas, &c., 132,617 cwt.; cotton, 76,705 cwt.; olive oil, 514,000 cwt.; and tobacco, 73,545 cwt. The value of the wine crop was £1,840,000., while that of raisins produced £2,400,000.

The mineral resources of Greece are of considerable importance, and it is only during the past fifteen years that their working has been conducted on proper principles. The working of the mines has been left to private enterprise, except in the case of gypsum, millstones, salt, and emery, the right of exploiting which the Government has reserved for itself. The chief mining works are at Laurium, and are owned by three companies, the most important of which is the *Compagnie Française des Mines du Laurium*, with a paid-up capital of £652,000., in 32,600 shares of 500 francs (£20.) each. This company works in lead ores and rich zinc ores, the latter, after extraction of the carbonic acid, being exported to Belgium. The Greek Smelting Company, successor to the French firm of Rouse & Co., established in 1873 with a capital of £560,000., principally produces argentiferous lead and galena, and also manganous iron ore. The results of the mining operations of 1890 have been more satisfactory than those of the years immediately preceding. The output of manganese ore amounted to 144,358 tons, valued at 2,310,000 francs, that of calmine to 32,550 tons, worth 5,599,000 fr., galena 2,100 tons, worth 849,100 fr., and argentiferous lead ore 13,371 tons, worth 7,683,000 fr. Regarding the mineral products worked by the State, it may be mentioned that the best quality of emery is obtained at Naxos, gypsum at Mylos (about 500

tons annually, valued at £600.), where are also obtained the millstones so well known in the East, and from which the State derives a profit of about £2,000. a year. The quarries from which these stones have hitherto been obtained are now nearly exhausted, so that fresh ground will soon have to be opened. There are ten salt works belonging to the State, the salt being exclusively obtained by evaporation from sea-water. These works are known as salt gardens, and the monopoly is remunerative owing to the cheapness of production, the process being much favoured by the warm summer air and sea breezes. The Government intend adopting an improved and cheaper process of evaporation, by which it is expected that the annual output of salt will be raised from 25,000 tons, its present figure, to something like 90,000 tons.

THE NEW FRENCH TARIFF.

The French Tariff Law of the 11th of January, 1892, has now been printed and issued to the public, and two translations of the Law into English have also been published. The first of these is issued by the International Customs Tariffs Bureau, in Brussels, and forms No. 22 of the *International Customs Journal*. The second is issued by the Trade and Treaties Committee, and is attached to their Seventh Report, which has been presented to Parliament.

It is now proposed shortly to give in review a list of such articles, together with the amount of import duty allotted to each article, and this may be premised by the statement that the duties on such articles are high in the majority of cases. It may also be here stated that the order of the articles according to the French tariff number has been strictly adhered to, and that the duties affixed are those of the minimum tariff as being those levied on articles of British manufacture.

The first of these articles to which reference should be made is (No. 31 of the French tariff, margarine, oleomargarine, and all other fatty substances to be used as food), such articles will pay 6s. per cwt., over ½d. per lb. The next is wood pavement (No. 129), which will pay very close on 8d. per cwt. Pâtes de cellulose (No. 168) wood pulp will pay, if treated by mechanical pressure, dry, 5d., or if moist, 2½d. per cwt.; the same article, if treated chemically, will pay 10d. Amongst builders' materials, tiles, machine-made (No. 181*c*) will pay 4d. per cwt., and squares of compressed cement (No. 186) will pay duties varying from 5d. to 1s. 8d. per cwt., according to state.

Mineral wax or ozokerite (No. 194) will pay when crude 4s. per cwt., and when refined 16s. Paraffin and vaseline (No. 199) will pay respectively 12s. and 11s. 2d. per cwt. Ether (No. 266*a*) will also pay 12s. per cwt., and chloroform (No. 266*b*) 30s. per cwt., collodion (No. 266*c*) being also taxed 12s. per cwt. Pyrolignite (No. 271*a*) of lead will pay 1s. 2¼d. per cwt., while pyrolignite of lime will pay 9½d. Sulphate and other salts of quinine will pay £30. per cwt., or 5s. 4d. per lb. Chemical manures, being chemical products to be used in agriculture (No. 281*a*), are to be imported free. Celluloid in lumps, cakes, or sheets (No. 281*b*) will pay £1. 10s. per cwt. Charcoal specially prepared for electric lights (No. 302) will pay £1. 5s. per cwt. Transparent soaps containing alcohol or sugar (No. 311) will pay 16s. per cwt. Dextrine and other products derived from fecula and starches (No. 319*b*) will pay 5s. 2d. per cwt. Electric incandescent lamps (No. 361) will pay, if with their mountings, £7. and if without the mountings, £14. per cwt.

THE CONSUMPTION OF PETROLEUM IN JAPAN.

The French Minister at Tokio, writing with regard to the consumption of Russian petroleum in Japan, says :—

The exceptional consumption of mineral oils for lighting purposes, which is yearly increasing in Japan since the changes introduced into the domestic life of the country by the adoption of European customs, has not failed to attract the attention of the Caucasian markets, whose production, in a sense illimitable, requires new outlets.

From Baku notably, where more than 100 refineries prepare each from 5,000 to 20,000 tons of petroleum per month, and where the exports to British India have assumed such proportions that Russian oils have taken the place of all competitors and constitute from 90 to 95 per cent. of the total consumption, important shipments have been made to Japanese ports.

The sum of 2,300,000 piastres, which represented the amount of the purchases in 1888, gave place in 1890 to that of 6,500,000. notwithstanding the disadvantage in the rates of freight under which Russian oils always carried in steamboats labour, whilst American petroleums are sent under particularly favourable conditions by special sailing ships.

Despite these obstacles, Russian petroleums are delivered at Tokio from 3d. to 5d. cheaper per case, although American petroleums and their quality are in no way inferior to the latter. There is therefore reason to suppose that the Japanese buyers will continue to address their orders to the petroleum centres of Transcaucasia, so long at least as the new deposits recently discovered in Peru should not have ousted their competitors by the facilities which are offered by the relative proximity of the coasts of the extreme East and Japan.

NITRATE REVENUE IN CHILI.

The *Chilian Times* says that since Chili came into posse Tarapacá and the other nitrate-producing territories she had in duties on nitrate and iodine up to the end of 1889 the e sum of 110,127,783 dols., as under :—

1880, 1,336,881 dols. ; 1881, 5,829,633 ; 1882, 8,317,712 10,176,336 ; 1884, 10,855,330 ; 1885, 10,510,182 ; 1886, 10,5 1887, 13,098,747 : 1888, 17,917,858 ; 1889, 21,485,685 dols.

If to the above there be added the duties received in 1890 ar we shall have a total not far short of 150 millions. In the op the *Chilian Times* it does not say much for the administrator national finances during the last twelve years that, with this e sum at their disposal, they should have failed to redeem tl money issued during the war, and that instead of reducing the debt they should have augmented it.

SOAPSTONE QUARRIES IN INDIA.

A correspondent of the Calcutta *Englishman* says, with r soapstone quarrying in Central India :—

On the north-east borders of the district of Singbhum runs hills called the Behlaipahari range, and they form a part of t of hills that divides the districts of Singbhum and Manbhum i Nagpur. The quarries are situated on the summit of this ra number about 25, 13 of which were, however, being worke time of my visit. The quarries are about 600 feet from the fo hills where lies the village of Behlaipahari, from which the h the name. The only means of reaching the quarries is by a c tortuous jungle paths made by the coolies and workmen, ascent is both difficult and trying, the gradient being very he the paths being covered with loose rocks and soapstones.

About half-way up there is a small hill streamlet on which th men and others employed at the quarries have to depend f water. On reaching the summit one meets with small shel belonging to the workmen, rudely constructed of brushwood, on small knolls at the mouths of the different quarries. picturesque, though far from inviting dwellings, workmen liv and day during the working season, depending on their fam food, which is daily taken up to them from the village. All one mass of dense jungle, and the people living in these shelter not enjoy an immunity from visits of wild animals. The quarr been worked entirely by natives for over a century. Shafts fou diameter and about 40 to 60 feet in depth are sunk, and f bottom of them galleries are cut out in different directions f the strata of the stone.

Descending one of these shafts is not an easy matter, and or be barefooted to do it. In some of them primitive ladders wooden poles, the rungs of which are lashed on with the ba jungle plant, are used as a means of descent, and in others po the rocks are left projecting, the ledges affording places for f Soapstone being lubricant, the descent has to be made with the care. The galleries are barely high enough in places for standir and in parts one has to crawl along on all fours. Work at the is in full swing during the cold season, and has to be done by light. In the hot weather lights will not burn satisfactorily i quarries, and in the rains work has to be stopped to a grea owing to the pits getting flooded, so that in the cold weather w on night and day. There are three different sets of v employed, and are all paid by piece-work. One set works dov pit and galleries, and they cut out slabs of the stone about 1 diameter and more or less circular in shape, and send ther women and children to the mouth of the shaft.

Then another set of workmen with small mattocks chip the slabs into rough plates, the work being done with ast rapidity and accuracy, and as soon as a number of these rou plates are ready they are sent down to the village by anoth coolies. At the village a third set of artizans turn the plates o and they soon assume a perfectly smooth surface, and are th for the market. A very large number of plates are turned o and are sent to Burdwan and other Bengal districts, where the as much as a rupee apiece. The lessees of the quarries m large profits by this industry. The cost of a plate, including workmen, carriers, and freight, is about three annas each, locally they sell for four to five annas each. I was very mu with the rapidity the workmen did their respective work, surprised to learn that though as many as 20 to 30 people wor quarry, accidents are unknown.

A Compound Manure.—According to Mr. J. Patterson, delphia, an excellent compound manure may be made b sulphate of iron, common salt and water to a mixture of lim stone and dung. The composition thus made is patented.

ARSENIC IN AMERICAN APPLES.

NSTERNATION has been rife of late, owing to the supposed contamination of Canadian apples with arsenic, derived from the green with which the trees are sprayed. In answer to these ous rumours, Mr. F. T. Shutt, the chemist to the Dominion il Experimental Farms, Ottawa, has made an exhaustive and isive research upon which he reports as follows :—

Thomas Fletcher, Dominon botanist and entomologst, pro- a sample of apples that had undoubtedly been sprayed, and I submitted them to a careful chemical analysis. The apples ned (Rhode Island greenings) were kindly furnished by Mr. 'erton, editor of the *Canadian Horticulturist*, who personally es for the fact that they were twice sprayed last June with Paris of the strength of 1lb. of the material to 200 gallons of water. pples when received, were just as they had come from the trees — iad not been rubbed—so that any arsenic left from the spraying still be on the skin.

: quantity tested for arsenic was 9lb. 7oz,. measuring about one

The process to which they were submitted is one that affords ıely accurate results, and is considered the most delicate of all : detection of arsenic. It is capable of revealing the presence of ity-thousandth part of a grain of arsenic. If the amount of the *um* fatal dose of arsenic—2½ grains—were spread over 23,000 ls of apples, the poison could be detected by this method.

ough the analysis was conducted with the greatest care, not a of arsenic could be detected, thus proving the complete absence poison in these apples that had been twice sprayed with Paris

n of the opinion that further experiments would only serve to orate this negative result, and to prove that there are no ds on which to base the suspicion that "sprayed" apples isonous.

would be an easy matter to quote the work and opinions of nt scientists in the United States to substantiate those results here led. Professors Riley, Cook, Forbes, and many others, have hed the results of analyses which are entirely in accord with my

: insoluble character of this poison, precluding the assimilation by pple (if such were possible) of the infinitesimal part of Paris that can remain on any apple, the frequent rains subsequent spraying, and the fact that apples are pared before using, all go bstantiate the argument that there is not the slightest danger of ing in using sprayed apples.

conclusion, I quote Mr. Fletcher, who, in a recent report,

—

requent inquiries are made, and occasionally misstatements r, as to the possible danger of poisoning the consumers of fruit rops protected by these arsenical poisons, which, it is urged, may sorbed by plants. These statements are, however, quite in- ıte, as a very elementary knowledge of vegetable physiology will

It should be remembered that the stigma of a flower is with- ıy epidermis, and is exceedingly delicate, so that any corrosive n, like arsenic, in even a very weak solution, would be much likely to injure the stigma than to be absorbed, and further than ven in the natural operation of fertilization, the stigma is a e member and absorbs nothing. The activity is on the part of ollen, which pushes down its forilla-bearing pollen tubes and le them through the tissues of the stigma down the style into vary."

s adds botanical evidence to chemical, to refute the rumour that ıed apples result from the practice of spraying with Paris green dling moth.

Trade Notes.

FRIGERATING MACHINERY.—Makers of refrigerating machinery o well to note the demand there seems to be for this class of goods : United States. A company having their works situated at o, N.Y., have recently taken contracts for plants capable of pro- g in the aggregate 100 tons, comprising one 20-ton, and two ı plants.

VAGE TREATMENT.—A new process for treating sewage by a ı of dual sewers, in conjunction with the use of sulphur dioxide as ıfecting agent is the latest contribution towards the solving of ordian knot. The plans may be seen and full particulars may tained by applying at the Atlantic Works of Messrs. Meldrum , City-road, Manchester.

SUBSTITUTE FOR TURPENTINE.—The following method for cing turpentine substitute is the subject of a recent patent eum spirit, or shale naphtha is treated with a current of air dried :viously passing over calcium oxide. Chlorine gas is then forced through until the specific gravity rises from 0·9 to 1·05. To remove any acid formed during this process the residue is treated first with air and then with carbonate of soda or other suitable alkali which is afterwards separated in the usual manner.

ALBUMEN TEST FOR URINE.—Dr. E. Speigler suggests the following: Mercuric chloride, 8·0; tartaric acid, 4·0; sugar, 20·0; water, 200 c. cm., as the reagent. Some urine is acidulated with strong acetic acid and filtered. Into a test-tube half filled with the reagent and behind which is placed a piece of black paper, add the urine so that it will float on the reagent. If the albumen be only 1 part in 50,000, either at once or within one minute there will be produced a white ring at the surface of contact.

THE ANILINE JOINT STOCK CO.—In their report this firm state that:—"The extraordinary unfavourable position in which the textile industry finds itself at present, has worked an unfavourable impression on the trade of our establishment during the course of the last year; for the textile industries are, of course, the chief receivers of our products. If, however, in spite of this, a small increase in the actual trade done has occurred, we can only attribute it to the great sacrifice which has been made in the price of our products." The profits for the year are computed at 2,330,730 mks., out of which, after allotting amounts to the reserve and other funds, a dividend of 6 per cent. will be paid, leaving 19,165 mks. to be carried forward to the next account.

Market Reports.

TAR AND AMMONIA PRODUCTS.

In the tar products market no change of any kind has been reported, nor indeed have we heard of any business which has been transacted during the past week.

The sulphate of ammonia market is very quiet, no doubt owing to the Easter holidays. The nominal price of Beckton is still £10. 2s. 6d., but there is nothing doing at this. In outside London makes there has been a fairly good demand, at prices ranging from £10. 6s. 3d. to £10. 7s. 6d., chiefly on account of Colonial orders At Hull there are sellers at £10. 5s., but buyers are endeavouring to secure their requirements at £10. 3s. 9d. for prompt shipment. At Leith it is understood that sales have been made at £10. 3s. 9d. for prompt shipment, although endeavours are being made to drop the price to £10. 2s. 6d. The market closes generally quiet, as it usually does about holiday time.

REPORT ON MANURE MATERIAL.

The activity noticed in our last report continues, more especially for prompt and early delivery, but prices remain without material alteration.

Florida, 75/80%, phosphate rock may still be had at 8½d. per unit, but in some quarters this price is now being refused. For Peace River rock, 60%, hot air-dried, 7¼d. per unit would be accepted, and further business has been done in hot air-dried Bull River rock at 7d. per unit, in cargoes, to good United Kingdom ports. We have no alteration to notice in Continental phosphates, which continue to offer freely at easy prices.

There is more enquiry for River Plate bone cargoes, but recent prices do not tempt sellers, and we do not hear of any actual business. We should call £4. 2s. 6d. the nearest value for any handy cargoes afloat, and £4. 3s. 9d. to £4. 5s. for cargoes for summer shipment. Recent prices accepted for East India crushed bones and bone meal on spot offer no inducement for shipment. For crushed Kurrachee bones for shipment about £4. 5s., ex quay Liverpool, would have to be paid, and it is doubtful whether less than this would be business for for fair average quality Bombay bone meal. There have been large sales of Bombay bone meal on spot, at £4. 5s. for fine quality, down to £3. 17s. 6d. for inferior, but an advance of about 2s. 6d. per ton is now required, the late arrivals having been cleared from the quay. The demand for good hard bones continues, and any good clean parcels would fetch about £4. 2s. 6d. per ton, ex quay Liverpool.

Deliveries of nitrate of soda continue to be very heavy, but prices do not show any improvement. On spot, refined quality may be had at 9s. per cwt., and inferior test at 8s. 9d., which latter price would no doubt be accepted for any cargoes arriving.

The demand for dried blood continues, and 9s. 6d. per unit would readily be paid for fine home prepared, delivered free to rails. Nearest value of River Plate may be quoted 9s. to 9s. 3d. per unit, ex quay Liverpool.

Superphosphates remain without alteration in values, but sellers seem wishful to get on with business. Kainit unchanged.

LIVERPOOL OIL AND COLOUR MARKET.

LIVERPOOL, Wednesday.

OILS.—Palm Oil has been very dull all the week. Now that the holidays are over, however, there is a slight improvement in the enquiry. Sales of Lagos having been made at £20. 10s.; Benin and Accra at £19. per ton all transit. Olive continues quiet on spot, prices ranging between £33. and £38 per tun. Linseed keeps steady at last week's figures, namely, 19s. 3d. to 20s. 6d. per cwt. in export casks. Cottonseed: Liverpool refined is improved somewhat, being quoted at 19s. 9d. American remains unaltered at 19s. 6d. Castor oil is quiet but fairly steady, good seconds Calcutta is quoted 2⅝d., while first pressure French has declined to the same figure. Tallow is steady though quiet, and is without change in values. Resin common remains at 4s. 3d. to 4s. 4½d., there being a good retail business passing to-day. Spirits of Turpentine continue firm at 26s. 9d., having been in moderate request at that price. American petroleum and Russian refined unaltered.

MISCELLANEOUS CHEMICAL MARKET.

The values of all heavy goods in chemicals are without any important change in the past week. In the alkali trade there is little difference in the position of any of the staple products. Caustic soda is still rather slow of sale generally, but prices are maintained at former rates, viz., f.o.b. Tyne, 77%, £11. 10s.; f.o.b. Liverpool, 74%, £11. 10s.; 70%, £10. 10s.; 60%, £9. 7s. 6d.; cream, 60%, £9. 2s. 6d., in 10 ton lots. Soda ash is in good demand at 1⅜d. per degree for Leblanc makes, and 1$\frac{5}{16}$d. for ammonia, 58%. Soda crystals are without change in position or value. Bleaching powder still firm, and in strong demand at £7. 10s. nett, f.o.r. makers' works, and £8. nett f.o.b. Liverpool and Tyne in export casks. For chlorate of potash 7d. per lb. is the maker's price, but there are still some resales at 6¾d. Chlorate of soda 7½d. Recovered sulphur rather quieter on the spot, and price £5. 5s. to £5. 10s. per ton. Vitriol and muriatic acids continue in fairly good demand, and prices are unaltered Brown acetate of lime has again declined slightly in value, but there has been more buying during the week both for spot and forward delivery. Other acetates have all a tendency towards lower prices. Acetic acid 11s. per cwt. for 40%. Lead salts are extremely dull, as are also zinc and tin salts and miscellaneous chemicals for the textile trades. Oxalic acid 3d. per lb, with discount, according to quantity. Bichromates still without change. Prussiate of potash well maintained at 10½d. to 10¾d. per lb., with fair demand. Arsenic firmer at £11. per ton. For potash, caustic and carbonate, the demand is rather light for the season of the year, but prices remain firm.

THE METAL MARKETS.

LONDON, Wednesday.—Pig iron better; Scotch warrants closed at 41s. 6d. Middlesbrough 38s. 4d. cash, and Hematite 48s. cash. Copper, easier. Chili bars, G.O B.'s and G.M.B.'s closed at £46 cash, and £46. 10s. to £46. 17s. 6d. three months. Tin slightly easier: Straits closed at £93. 5s. to £93. 15s. cash, and £93. 5s. to £93. 10s. three months. Australian, £93. 7s. 6d. cash; English ingots, £96. 10s. to £97. Lead quiet: Spanish, £10. 12s. 6d. English, £10. 15s. to £11. Silesian spelter, ordinary, £22. 5s. to £22. 10s. Quicksilver, £6. 15s., first hands. Copper shares flat: Cape, 1⅜ to 1½; Copiapo, 2¼ to 2⅜; Libiola, 2$\frac{15}{16}$ to 3$\frac{1}{16}$; Mason and Barry, 4 to 4⅛; Rio Tinto, 16½ to 16⅝; Tharsis, 4⅞ to 5; Namaqua, 1¼ to 1⅜; Panulcillo $\frac{9}{16}$ to $\frac{11}{16}$.

WOLVERHAMPTON, Wednesday.—Following the quarterly meetings to-day's market was quiet, and until to-night, when a re-start takes place, the ironworks have been closed for the holidays. Prices are maintained on last week's basis. Marked bars, £8.; merchant sorts, £6. 10s. to £6. 15s.; and common, £6. 15s. upwards. Galvanising sheets (singles) are £6. 15s. to £7.; doubles, £7. to £7. 5s. Pig iron, tame; Lincolnshires, 47s. 6d.; Derbyshires and Northamptonshires, 44s. to 46s.; native cinders are 37s. 6d., and part-mines 40s. upwards.

GLASGOW, Wednesday.—Market continues firm, with good business. No Scotch done; closing buyers at 41s. 6d. cash, sellers ask 41s. 9d. Middlesbrough done at 38s. 4d., 38s. 5d., 38s. 6d., 38s. 5d. and 38s. 5½d. cash, also at 38s. 7d. 11th May; closing buyers at 38s. 4d. cash and 38s. 5d. one month, sellers ask 38s. 5d. cash and 38s. 5½d. one month. Hematite done at 48s. cash, also at 48s. 3d., 48s. 2d., and 48s. 2½d. one month; closing buyers at 48s. cash and 48s. 1d. one month, sellers ask 1d. more.

TYNE CHEMICAL REPORT.

Tue

Very little business doing owing to Easter holidays, prices said to be fully maintained. Bleaching powder, softs, £7. ton, hards, £7. 15s. per ton, very scarce; caustic soda, 76/77 per ton, 70%, £10. 15s. per ton; recovered sulphur, 2 cwt. bags, per ton; soda ash, 48%, £5. 8s. 9d. per ton, 52%, £5. 17s. ton, 56%, £6. 6s. 9d. per ton; alkali, 36%, £4. 18s. 6d. white alkali, 48%, £6. 10s. per ton, 50%, £6. 15s. 6d. 52%, £7. per ton; hyposulphite of soda, £7. per ton in casks, £7. 15s. per ton in 1 cwt. kegs, both in 10 ton lots; si soda, 75° Tw. £3. per ton, 100° Tw. £4. per ton, 14 £4. 7s. 6d. per ton; soda crystals, in casks, £3. 5s. per t weight, in 2 cwt. bags, £3. 5s. per ton nett weight; chl potash, 7d. per lb. less 6%; pearl hardening, £3. 10s. per to pure white sulphate of alumina, £4. 10s. per ton; blanc fixe, per ton; chloride of barium, £7. 10s. per ton; nitrate o crystals, £19. per ton; nitrate of baryta, ground, £19. 10s. sulphide of barium, £7. per ton; carbonate of alumina, £ per ton; aluminate of soda, £33. 10s. per ton; hydrate of £11. per ton.

South Durham salt, scarce, price quoted 9s. 6d. and 10s. per t

Coals: Northumberland coals, prices remain unaltered, quiet.

Durham strike: The ballot just taken still shows a large ma favour of continuing the strike, though the majority as compare the last ballot is reduced by about one-sixth.

THE LIVERPOOL MINERAL MARKET.

The quietness of last week, owing to the intervention of the holidays, continues to prevail. Manganese is firm at the a prices. Borate, 6¼d. per lb.; sulphate, £21. 10s.; 1s. 6d. per lb.; chloride, £15.; carbonate, £12. 10s., Magnesite: Raw lump flat. Raw ground £6. 10s, and calcine 10s. Bauxite (Irish Hill brand) steady; lump, 20s.; second and thirds, 12s. French chalk: Arrivals this week are small. have been made, however, at full figures. "Angel White" silvery, 90s. to 92s. 6d.; prime quality, 90s. to 95s; and su 105s. Barytes:—Carbonate scarce, especially best lump at 95s.; nuts, 70s. to 80s.; whilst finest white sulphate is "Angel White," No. 1, 70s.; No. 2, 60s. to 65s.; No. Pumicestone steady. Iron ore steady; Bilbao shipments un Irish and Cumberland easy. Santander and manganiferous, more doing. Emerystone continues steady, especially best q No. 1 lump, £5. 10s. to £6.; smalls, £5. to £5. 10s. earth quiet; best lump, 55s.; fine impalpable ground, "Emerald" ground, 80s. Scheelite, wolfram, tungstate o and tungsten metal firm and unaltered. Chrome ore: More especially for the higher qualities. Stocks practically nil. A ore and metal, rather flat. Asbestos very firm. Potters' le smalls, £10. 10s. to £11. 10s. Calamine easy. Strontia s (celestine) quiet. Limespar unchanged, especially for English factured; old G.G.B. brand in demand at 50s. (ground). unchanged. Fluorspar: Best quality scarce. Ferro-manganese 75%, £12.; 85%, £13. 15s. Plumbago brisk. Spanish, £5 Ceylon lump at last quotations; Italian and Bohemian, £4. per ton. "Founders," £5. to £6.; Blackwell's "Mineraline, French sand, 20s. to 22s. 6d. Ground mica, £45 to £50. Chi steady; common, 18s. 6d.; good medium, 22s. 6d. to 25s.; be to 35s. (at Runcorn). Bog ore (oxide of iron) steady; finest 22s. to 23s.

WEST OF SCOTLAND CHEMICALS.

GLASGOW, Tues

Values of mineral oils and solid paraffins are all nominally unc and as given below, but the true position is really one of serio nation, very perceptibly accentuated since last report. Make been conferring gravely together over the situation, and various remedies are under discussion, if not actually decided on. The the shape of a restriction of the make of crude oil and paraffin s conjunction with intimation to the men in the mines and at th of an early reduction of wages. The "pooling" of some of t ducts of the general industry has also been in contemplation mines and plant of the defunct West Lothian Oil Co., were la put up at the reduced upset of £15,000., but there was no bid.

re to go up again to-morrow, at £10,000. upset. There could be no worse time for realising on property of the kind.

Sulphate of ammonia is if anything still weaker, and the quotation for prompt to-day is £10. 2s. 6d. to £10. 3s. 9d., with the possibility of buying at the lower, although some sellers hold for the higher.

The general market continues as before with prices inclined to rise, but very little doing all the same. The chief feature is the the advance of 5s. in caustic sodas. Bleach quotations are fractionally higher in some makes.

Chief prices current are:—Soda crystals, £3. 3s. 9d., nett Tyne; alum in lump, £5. 10s., nett Glasgow; soda ash, 1⅜d., less 2½%, Tyne; caustic soda, white, 74°, £11. 15s., 70/72°, £10. 15s., 60/62°, £9. 15s., and cream 60/62°, £9. 10s., all nett Liverpool; bicarbonate of soda, 5 cwt. casks, £6. 15s., and 1 cwt. casks, £7. nett Tyne; refined alkali, 1⅝d., less 2½% Tyne; bleaching powder, £7. 10s. nett Tyne; saltcake, 37s. 6d.; borax, English refined, £29. 10s. and boracic acid, £37. 10s., nett Glasgow; bichromate of potash, 3¼d., less 12½% for Scotch and English deliveries (for export 3¼d., less 10% f.o.b. Glasgow); bichromate of soda, 2¾d., less 10% for Scotch and English deliveries (for export 2½d., less 10% f.o.b. Glasgow); chlorate of potash, 6¼d., less 5% any port; nitrate of soda, 9s.; sulphate of ammonia, £10. 2s. 6d. to £10. 3s. 9d. f.o.b. Leith; salammoniac, first and second white, £35. and £33., less 5% any port; sulphate of copper, £15. less 5% Liverpool; paraffin scale (hard), 2⅝d., and soft 2⅝d. to 3d. per lb.; paraffin wax, 120°, semi-refined, 3⅝d. to 4d.; paraffin spirit (naphtha), 7d. a gallon; paraffin oil (burning) 5d., 5¼d. and 5½d. according to kind, at works, for Scotch buyers (English sales about 1d. lower); ditto (lubricating), 865°, £3. 10s. to £4., 885°, £5. 5s. to £7., and 890/895°, £6. to £8. Week's imports of raw sugar at Greenock, 18,321 bags.

New Companies.

District Chemical Co., Limited.—This company was registered on the 9th inst., with a capital of £50,000., in £1. shares (48,000 "A" and 2,000 "B"), to act as manufacturers of and to deal in chemicals, and the products of chemical processes, and to purchase or otherwise acquire, use and turn to account, a certain licence dated February 12, 1892, granted by Soda Improvements Co., Ltd., to Mr. H. E. Angel, and the rights thereunder. The subscribers are:—

	Shares.
G. T. Devonshire, 16, Railway-street, York-road, N., clerk	1
W. Woodhouse, 25, Bristol Gardens, Maida Vale, clerk	1
H. L. Jerome, 13, Chesham Buildings, Duke-street, W.	1
A. Doley, 51, Archer-street, Bayswater, W., fruiterer	1
G. W. H. Stephens, 12, Sundorne-road, Old Charlton, Kent, clerk	1
C. L. Jones, 3, Tanfield-court, Temple, E.C.	1
W. Baxter, 19, Bryne-road, Balham, S.W., clerk	1

Henry Grant and Co., Limited.—This company was registered on the 11th inst., with a capital of £6,000., in £1. shares, to acquire and take over as a going concern and carry on the business of tin plate workers, heretofore carried on by Mr. B. Noakes, at Spa Road, Bermondsey, under the style of B. Noakes and Co. The subscribers are:—

	Shares.
H. G. Noakes, 93, Tubbs-road, Harlesden, tin plate worker	1,664
P. A. Cramer, 9, Birchington-road, Crouch End, tin plate worker	1,664
G. Williams, Boyne Lodge, Florence-road, Ealing, tin plate worker	1,666
Mrs. H. G. Noakes, 93, Tubbs-road, Harlesden	1
Miss M. J. Noakes, 12, Mirander-road, Upper Holloway	1
Mrs. P. A. Cramer, 9, Birchington-road, Crouch End	1
W. S. Morgan, 3, Palliser-road, West Kensington	1
Mrs. M. E. Williams, Boyne Lodge, Florence-road, Ealing	1
Miss K. Williams, Boyne Lodge, Florence-road, Ealing	1

Schultze Gunpowder Co., Limited.—This company was registered on the 6th inst., with a capital of £100,000., in £10. shares to enter into an agreement with the Schultze Gunpowder Co., Limited (the old company), and Messrs. W. F. Smith and G. W. M. Dale, its liquidators; and to carry on the business of manufacturers of explosives (whether sporting or military gunpowder of every description, nitroglycerine, dynamite, guncotton, blasting powder, etc.) The subscribers are:—

	Shares.
W. F. Smith, 8, Holland Park Terrace, Kensington, underwriter	1
G. W. M. Dale, 1, Stone Buildings, Lincoln's Inn, W.C.	1
H. G. Newcome, Aldershot Manor, Hants, major R.A., retired	1
Rev. G. B. Oldfield, Sedgehill Rectory, Shaftesbury	1
H. T. Withers, 17, Mornington-road, Bow, E.	1
V. T. Mitchell, 22, Linthorpe-road, Stamford Hill	1
A. B. Smith, 45, Lansdowne-road, Notting Hill, W.	1

Thomas C. Steedman, Limited.—This company was registered on the 8th inst., with a capital of £5,000., in £1. shares, to carry on the business of chemists, druggists, drysalters, oil and colourmen.

Gazette Notices.

PARTNERSHIPS DISSOLVED.

R. Webster, W. Adams, and G. A. Webster under the style of Adams, Webster and Co., Hackney Downs, Leabridge, Leyton and elsewhere, chemical manure, disinfectants, carbolic acid, and chemical manufacturers.

G. C. Holt and C. Holt under the style of G. C. Holt and Co., Buglawton, Congleton, soap and perfumery manufacturers and drysalters.

Adjudications.

Stephens, Jonathan, Devonport, chemist and druggist.

The Patent List.

This list is compiled from Official sources in the Manchester Technical Laboratory, under the immediate supervision of George E. Davis and Alfred R. Davis, who report professionally upon the value of Chemical Patents.

APPLICATIONS FOR LETTERS PATENT.

Drying Peat Manure, etc. W. Bowler and J. Bradbury. 6,442. April 4.
Manufacture of Explosives. C. O. Lundholm and J. Sayers. 6,448. April 4.
Secondary Batteries. G. E. Heyl. 6,465. April 4.
Manufacture of Alkaline Carbonates or Bi-Carbonates by Electrolytic Decomposition of Alkaline Chlorides in the Presence of Gelatinous Alumina or other Aluminium Salts. E. Hermite and A. Dubosc. 6,467. April 4.
Ore Crushing Machinery. C. G. T. Neumann. 6,469. April 4.
Smoke Consuming Furnaces and Fire Places. J. Somerville. 6,510. April 5.
Manufacture of Pigments. G. W. Scollay. 6,516. April 5.
Improvements in Oxy-Hydrogen Lime Light Lanterns. H. J. Husbands, J. W. Husbands, and A. W. Husbands. 6,527. April 5.
Treating Ores Containing Metals and Sulphur. H. R. Lewis and C. Gelstharp. 6,567. April 5.
Alternate Current Electro-Motors M. Deri. 6,579. April 5.
Manufacture of Colouring Matters. C. D. Abel. 6,630. April 6.
Producing Fresh from Salt Water. A. Normandy and F. Normandy. 6,632. April 6.
Electrodes for Storage Batteries. G. E. Heyl. 6,637. April 6.
Refrigerating Apparatus. C. D. Abel. 6,700. April 7.
Compound for Carburizing Metals. S. H. Brown. 6,704. April 7.
Improvements in Secondary Batteries. W. W. Donaldson and R. Macrae. 6,722. April 7.
Purifying Sewage and Waste Water. H. Grimshaw. 6,731. April 8.
Utilizing Gas for Heating Purposes. D. Rylands. 6,733. April 8
Manufacture of Hydraulic Cement. V. F. L. Smidth. 6,745. April 8.
Improvements in the Treatment of Fuel. W. D. Scott-Moncrieff. 6,819. April 9.
Improved Petroleum Motor. T. R. Shillito, 6,872. April 9.
Improvements in Crushers and Pulverisers. W. C. Morison. 6,881. April 9.

IMPORTS OF CHEMICAL PRODUCTS

AT

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending April 9th.

Acetic Acid—			
Holland,	4 pkgs.	A. & M. Zimmermann	
Acetone—			
Holland,	9 pkgs.	A. & M. Zimmermann	
,,	2	T. Palmer	
Alkali—			
France,	210 c.	Arnati & Harrison	
Alum—			
Holland,	82 pkgs.	Oblenschlager Bros.	
Ammonia—			
France,	200 pkgs.	Weatherley, Mead, & Co.	
,,	1	J. Burnett & Sons	
Asbestos—			
Italy,	£390	L. & I. D. Jt. Co.	
A. Turkey,	35	Capt. Caslem	
Barytes—			
Germany,	45 cks.	W. Harrison & Co.	
Belgium,	21	,,	
,,	23	Leach & Co.	
Holland,	22	W. Harrison & Co.	
Belgium,	57	Magee, Taylor, & Co.	
Brimstone—			
Italy,	300 t.	Brandram Bros. & Co.	
,,	24	Blackwood, Bryson, & Co.	
,,	300	W. C. Bacon & Co.	
Calcium Citrate —			
Italy,	10 pkgs.	C. Webster	
Caoutchouc—			
Zanzibar,	50 c.	Hecht, Levis, & Kahn	
Ecuador,	4	Park, Macfadyen, & Co.	
France,	19	Prop. Bull Wf.	
U. States,	52	Lewis & Peat	
Ceylon,	2	Arbuthnot, Latham, & Co.	
France,	50	Stiebel Bros.	
Madagascar,	12	Proctor Bros.	
,,	19	Lewis & Peat	
Zanzibar,	13	Anderson, Weber, & Smith	
Savanilla,	43	Prop. Bull Wf.	
Portugal,	4	Wallace Bros.	
Singapore,	167	Kleinwort, Sons, & Co.	
Germany,	64	Prop. Bull Wf.	
Zanzibar,	1	Clarke & Smith	
Portugal,	4	,,	
,,	17	Wallace Bros.	

Caustic Potash—
France, 21 pkgs. Beresford & Co.

Chemicals *(otherwise undescribed)*
Germany, 6 pkgs. T. H. Lee
,, 16 A. & M. Zimmermann
,, 18 T. H. Lee
,, £6 ,,
France, 5 Van Oppen & Co., Ltd.
Germany, 5 pkgs Phillipps & Graves
,, 1 L. & I. D. Jt. Co.
Holland, £19 R. Morrison & Co.
,, 12 W. H. Muller & Co.
Germany, 32 T. H. Lee
,, 29 A. & M. Zimmermann

Copper Pyrites—
Spain, 2,431 t. C. Tennant, Sons, & Co.
,, 850 Forbes, Abbott, & Co.
,, 450 C. Tennant, Sons, & Co.
,, 900 Andersen, Anderson, & Co.

Cream of Tartar—
France, 5 pkgs. W. C. Bacon & Co.
,, 4 Smith, Abbott, & Co.
Holland, 9 Middleton & Co.
Spain. 5 C. Christopherson & Co.
France, 1 B. & F. Wf. Co., Ltd.
,, 3 E. W. Carling & Co.
,, 6 Smith, Abbott, & Co.
Spain, 51 B. & F. Wf. Co., Ltd.

Creosote—
Belgium, 13 pkgs. T. H. Lee

Dyestuffs—
Alizarine
Holland, 1 pkg. Suren, Hartimann, & Co.
Aniline
Holland, 8 pkgs. Suren, Hartimann, & Co.
Annatto
France, 3 pkgs. B. & F. Wf. Co., Ltd.
,, 7 R. J. Fullwood & Bland
Argols
Spain, 8 pkgs. C. Christopherson & Co.
Italy, 720 B. Jacob & Sons
,, 74 Thames S. T. & L. Co., Ltd.
Cochineal
Canaries, 121 pkgs. W. H. Cole & Co.
,, 5 Sperling & Williams
,, 4 Binnie & Co.
,, 15 G. S. Bruce
,, 20 Kulmer, Henderson, & Co.
,, 6 Sperling & Williams
Divi divi
E. Indies, 126 pkgs Walker, Munsie, & Co.
Extracts
Belgium, 20 pkgs. T. H. Lee
Canada. 200 T. Ronaldson & Co.
Denmark, 25 A. F. White & Co.
,, 28 Bailey & Leetham
U. States, 25 W. A. Bowditch
Denmark, 1 R. J. Fullwood & Bland
France, 170 B. & F. Wf. Co., Ltd.
,, 130 L. J. Levinstein & Sons
Gambier
Singapore, 18 pkgs. S. Barrow & Bros., Ltd.
,, 817 R. & J. Henderson
,, 1,052 Beresford & Co
,, 130 Brinkmann & Co.
Indigo
E. Indies, 13 chts. W. Brandt, Sons, & Co.
,, 29 Arbuthnot, Latham, & Co.
,, 12 Ross & Deering
,, 5 L. & I. D. Jt. Co.
,, 19 T. H. Allan & Co.
,, 11 Benecke, Souchay, & Co.
,, 48 Oldemeyer & Co.
,, 50 L. & I. D. Jt. Co.
,, 10 W. Brandt, Sons, & Co.
,, 16 L. & I. D. Jt. Co.
,, 25 E. Bower & Co.
,, 14 Arbuthnot, Latham, & Co.
,, 124 L. & I. D. Jt. Co.
Holland, 1 Ripley, Roberts, & Co.
,, 1 cs. T. H. Lee

Madder
Holland, 7 pkgs. Williams, Torrey, & Co.
Myrabolams
E. Indies, 4,057 pkgs. Hoare, Wilson, & Co.
,, 1,366 A. Hagan
,, 6,865 W. Shelcott
,, 43 L. & I. D. Jt. Co.
,, 2,000 C. E. Fosbrooke
,, 2,713 A. Hagan
,, 385 ,,
,, 5 Anderson, Weber, & Smith
,, 364 L. & I. D. Jt. Co.
,, 934 Baxter & Hoare
Safflower
E. Indies, 25 pkgs. Brown & Elmslie
Saffron
Spain, 1 pkg. Major & Field
Sumac
Italy, 575 pkgs. J. Kitchin, Ltd.
,, 200 J. E. Scott
,, 500 Beresford & Co.
,, 600 W. Shelcott
,, 50 H. Johnson & Sons
Tanners' Bark
Belgium, 20 t. Oastler, Palmer, & Co.
,, 19 Arnati & Harrison
Turmeric
E. Indies, 148 pkgs. Ross & Deering
China, 100 H. A. Litchfield & Co.
Cochin, 320 G. & H. Green
,, 320 Anderson, Weber & Smith
China, 20 P. & O. Co.

Farina—
Holland, 50 pkgs. J. Knill & Co.

French Chalk—
Italy, £40 C. F. Gerhardt

Glucose—
U. States, 250 pkgs. 250 c. L. & I. D. Jt. Co.
,, 50 298 Page, Son, & East
,, 100 598 R. G. Hall & Co.
,, 20 139 Ohlenschlager Bros.
,, 100 100 J. Barber & Co.
Holland, 60 60 C. A. Farmer
U. States, 50 301 J. Knill & Co.
,, 25 143 L. & I. D. Jt. Co.
France, 200 200 J. Barber & Co.
,, 200 200 Barrett, Tagant, & Co.
U. States, 250 250 J. Knill & Co.
,, 750 750 R. G. Hall & Co.
,, 600 600 Anderson, Weber, & Co.
,, 500 500 L. & I. D. Jt. Co.

Manure—
Germany, 25 t. Gillespie Bros. & Co.
E. Indies 3,842 W. H. Carey & Sons
Auckand, 12. Vokins & Co
Germany, 35 L. Knoblauch
,, 100 F. W. Berk & Co., Ltd.
Portugal, 21 G. Bennett & Sons

Methyl Alcohol—
Belgium, 12 drs. Stein Bros.
,, 4 Lister & Biggs

Mica—
France, £8 W. H. Smith & Sons
E. Indies, 60 ,,

Nitrate of Ammonia—
Germany, 2 pkgs. Petri Bros.

Ochre—
France, 30 cks. C. F. Gerhardt
,, 300 Blundell, Spence, & Co
,, 42 Arnati & Harrison
,, 40 W. Harrison & Co.
U States, 10 brls. Magee, Taylor, & Co.
France, 42 W. Harrison & Co.
,, 1 Stobbs, Wilson, & Co.
Holland, 3 pkgs. Phillipps & Graves
France, 1 ck. Stobbs, Wilson & Co.

Painters' Colours—
Germany, 8 pkgs. L. & I. D. Jt. Co.
,, 5 T. H. Lee
Singapore, 2 L. & I. D. Jt. Co.
France, 15 Flageollet & Co.
,, 14 F. C. Smith
Germany, 1 ck. H. Lambert
,, 17 L. & I. D. Jt. Co.
,, 10 Beresford & Co.
,, 40 Spies Bros. & Co.
Holland. 4 F. Barlett
Belgium, 7 T. Palmer
France, 7 Flageollet & Co.
Germany, 11 Phillipps & Graves
France, 1 G. W. Wheatley & Co.
Italy, 3 cks. Italio Brit. S. N. Co.
Belgium. 13 T. Palmer
Germany, 10 L. & I. D. Jt. Co.
France, 2 Flageollet & Co.
,, 3 Bennett S.S. Co., Ld.
U. States, 13 Beck & Pollitzer
Germany, 5 T. H. Lee

Paraffin Wax—
Germany, 54 cs. Grossecurth & Luddoldt
U. States, 37 brls. Mordaunt Bros.
,, 100 L. & I. D. Jt. Co.

Phosphate Rock—
Holland, 92 t. Anglo-Contl. G. Works
Belgium. 220 London Manure Co.
France, 132 G. F. Galbraith
Belgium, 156 T. Farmer & Co., Ltd.
U. States, 1,827 C. Page & Co.

Phosphoric Anhydride—
Germany, 30 pkgs. L. & I. D. Jt. Co.

Plumbago—
Ceylon, 40 brls. R. G. Hall & Co.
,, 21 Le Seuer & Co.
——— 77 Prop. Sun Wf.
Ceylon, 80 R. G. Hall & Co.
,, 171 Temperleys & Co.
,, 348 J. Thredder, Sons, & Co.
Holland, 73 cks. B. Gallaway
Germany, 4 T. H. Lee

Potash—
U. States, 222 c. Charles & Fox

Potassium Bicarbonate—
Holland, 13 cks. A. & M. Zimmermann

Potassium Carbonate—
France, 200 c. Charles & Fox

Potassium Muriate—
Germany, 2 pkgs. H. Lambert
,, 200 F. W. Berk & Co.

Potassium Sulphate—
Germany, 40 cks. H. Lambert

Quicksilver—
Italy, 150 flasks H. Bath & Son

Saltpetre—
Germany, 60 cks. P. Hecker & Co.
Holland, 16 Phillipps & Graves
E. Indies, 1,184 bgs. Ralli Bros.
,, 1,599 C. Wimble & Co.

Sodium Acetate—
France, 9 pkgs. S. F. Waters & Co.

Sodium Sulphate—
Germany, 1 pkg. Pickford & Co.

Stearine—
France, 290 bgs. G. Boor & Co.

Sugar of Lead—
Germany, 17 pkgs. W. Gaudery & Co.

Talc—
Italy, £40 Davies, Turner, & Co.
Belgium, 2 t B. Gallaway

Tallow—
Queensland 18 cks. N. Z. L. & M. A. Co.
,, 173 Goldsbrough, Mort, & Co.
Belgium, 24 Sawer, Mead, & Co.
Falkland Is., 1 Dyster, Nalder, & Co.
Adelaide, 131 Ross & Deering
,, 8 Anning & Cobb
,, 35 L. & I. Dk. Co.
,, 17 Dalgety & Co., Ltd.
France, 32 H. Grey, Jun.
Sydney, 89 Goad, Rigg, & Co.
N. Zealand, 11 ,,
,, 73 Hicks, Nash, & Co.
,, 5 Flack, Chandler, & Co.
Queensland, 70 L. & I. Dk. Co.

Tartaric Acid—
Holland, 13 pkgs. W. C. Ba
Spain, 7 B. & F. Wf.

Ultramarine—
Belgium, 11 cs. W. Harri
,, 20 pkgs. Mage
Germany, 31 G.
Holland. 13 Haeff
Germany, 2 cks. H
Holland, 2 Haeffner, H
,, 5 Phillipps
Germany, 20 G.
Holland, 5 Phillipps

Varnish—
Belgium, 1 pkg. Stobbs, W
U. States, 15 Beck &
,, 27 Pinchin, Johns

Verdigris—
France, 1 pkg. B. & F.

Vermillion—
China, 15 cs. S. Fig

White Lead—
Belgium, 8 cks. J. Sk
,, 25 J. F. Ly
Holland, 10 T.
,, 18 A. & M. Zim
Germany, 10 S. H. W
,, 24 M. As
France, 45 W. Harri
Germany, 2 Haeffner, Hilp

Zinc Oxide—
Holland, 195 brls. M. As
,, 625 Sound
Germany, 13 cks. M. As
,, 20 J

Zinc Sulphate—
Germany, 31 pkgs.

LIVERPOC

Week ending April

Acid—
Havre, 1 brl. Cunard

Asphaltum—
New York, 1 brl. T. Meado

Barilla—
Arica, 655 sks. Kleinwort
Mollendo, 539 bgs. Kleinwor

Barytes—
Rotterdam, 24 cks.
Antwerp, 32 100 bgs.

Bicarbonate of Soda—
Stettin, 235 cks.

Bone Ash—
San Nicholas, 3,800 kilos

Borate of Lime—
Iquique, 707 bgs.

Chemicals *(otherwise unde*
Rotterdam, 150 tcs. 60 bgs
In transit, 5

Colours—
Rotterdam, 4 cs. 11 cks.

Copper Pyrites—
Huelva, 1,456 t. Tennar
,, 1,045 Mathes

Cream of Tartar—
Tarragona, 5 cks Sachse &
Barcelona, 10 hds.
,, 2 pps.

Dyestuffs—
Argols
Patras, 25 cs. M. G. A
Bordeaux, 109 cks.
Divi Divi
New York, 150 bgs. Leech, I
Amsterdam, 200 Browne, Gew
Dyewood Extract
New York, 35 brls.
,, 20 J. S
Bordeaux, 100 cks.
New York, 50 bxs.

ıc
5 bgs.
, 150 200 bls. J. Kitchen, Ltd.
ıa, 100 sks.
boiams
, 614 bgs. Aldridge, Salmon & Co.
1,394 D Sassoon & Co.
2,382
1,927
d—
473 ps. Cunard SS. Co. Ltd.
—
235 sks.
ese Ore—
50, 126 t.
00, 980

es, 45 cks.
27 brls. Alexander & Aikman
x, 52 cks.
108

51 cs. Bahr, Behrend & Ross.

es, 97 brls.
—
58 cks. Co-op. W'sale. Soc. Ltd.
Tartar—
ım, 10 cks.
'e—
ee, 210 bgs. W. & R. Graham & Co.
g, 100 brls. 50 kgs.

1 cs. Simpson, Mackirdy & Co.
es, 1 Munsters, Simms & Co.
ne—
x, 100 bgs. C. G. Blackwell
)—
rk, 27 tcs.
, 24 bgs. J. T. Fletcher & Co.
Ore—
1,414 t.
Pyrites—
1,346 t. Matheson & Co.
1,427 ,,
—
k, 92 hds.
30
117 brls.
phia, 70 tcs. 50
Extracts
, 27 cks.
Acid—
m, 10 cks.
20
rine—
3, 1 ck. 10 cs.
m, 12
—
4 cs. Simpson, Mackirdy & Co.
s—
, 1 ck
alt—
3, 100 t.
440
sad—
20 cks.
ies—
s, 12 brls.
de—
k, 100 brls.
m, 40 cks.
60 brls. J. T. Fletcher & Co.
95

LASGOW.

ending April 14th.

n, 20 cks. G. & J. Boyd
im—
16 css. 1 pkge.
d—
1 brl.
olours—
n, 2 cs. J. Rankine & Son
Chloride—
n, 12 cks. James Rankine & Son

Barytes—
Rotterdam, 23 cks J. Rankine & Son
Barytes Sulphate—
Antwerp, 450 bgs. 20 cks.
Chrome Ore
Gulf of Macri, 1,860 t. Stevenson, Carlisle & Co.
Colours—
Rotterdam, 7 cks. Jas Rankine & Son
,, 14 brls. 7 css. ,,
Copper Pyrites—
Huelva, 1,717 t Tharsis Sulphur & Copper Co., Ltd.
Dyestuffs—
Alizarine
Rotterdam, 30 cks. 4 css.
Madder
Marseilles, 4 brls.
Tan Extracts
Marseilles, 30 brls.
Dyewood Extract
New York, 10 brls. 5 bxs.
Farina—
Bordeaux, 2 css.
Glucose—
New York, 200 brls. 50 bxs.
Glycerine—
Rotterdam, 1 drm.
Ochre—
Marseilles, 48 brls.
Rouen, 10 cks.
Bordeaux, 6
Phosphate Rock—
Aruba, 400 t. R. & J. Garroway
Tampa, 1,650 A. Cross & Sons
Potash—
Dunkirk, 40 drms.
Pyrites—
Pomaron, 1,050 t. A. Hope, jun., & Co.
Rosin—
Savannah, 3,500 brls. W. M. Gemmel & Co.
New York, 600
Saltpetre—
Hamburg, 60 cks.
Soap—
New York, 999 brls.
Marseilles, 3 css.
Sodium Acetate—
Rouen, 8 cks.
Sodium Nitrate—
Iquique, 1,050 t. Thomson, Aikman & Co.
Sulphur Ore
Seville, 1,280 t. The Seville Sulphur & Copper Co., Ltd.
Tallow—
New York, 40 hdds.
Tartar—
Bordeaux, 15 cks.
Turpentine—
Savannah, 200 brls. W. M. Gemmel & Co.
Waste Salt—
Hamburg, 110 t.
,, 100
White Lead—
Rotterdam 60 cks.
Zinc Oxide—
Antwerp, 25 cks.

HULL.

Week ending April 9th.

Asbestos—
Flushing, 3 bgs. Zeeland S.S. Co.
Bremen, 13 bls. J. Pyefinch & Co.
Barytes—
Antwerp, 120 bgs. 10 cks. Bailey & Leetham
Bremen, 26 cks. Veltmann & Co.
Benzoic Acid—
Rotterdam, 1 brl. Hutchinson & Son
Chemicals *(otherwise undescribed)*
Stettin, 61 brls. Wilson, Sons & Co., Ltd.
Marseilles, 5 cks. ,,
Bremen, 2 J. Pyefinch & Co.
,, 12 pks. Veltmann & Co.
Dunkirk, 156 Wilson, Sons & Co., Ltd.
Antwerp, 7 ,,
Colours—
Rotterdam, 15 cks. G. Lawson & Sons
Flushing, 26 10 cs. Zeeland S. S. Co.
Ghent, 16 Wilson, Sons & Co., Ltd.
Antwerp, 3
Rotterdam, 37 pks. W. & C. L. Ringrose
Genoa, 3 Wilson, Sons & Co., Ltd.
Bremen, 5 cks Veltmann & Co.
Stettin, 100
Danzig, 33 pkgs.
Rotterdam, 10 cs 16 brls. Hutchinson & Son
,, 14 23 cks. W. & C. L. Ringrose
,, 5 cks. G. Lawson & Sons
Flushing, 44 cks. 11 cs. 8 pks. Zeeland S.S. Co.
Rotterdam, 2 pks. G. Lawson & Sons
,, 2 Blundell, Spence & Co.
Antwerp, 47 Wilson, Sons & Co., Ltd.
,, 56 cks.
Dyestuffs—
Alizarine
Rotterdam, 32 pks. W. & C. L. Ringrose
,, 70 cks. 5 cs. ,,
Aniline
Flushing, 4 cks. Zeeland S.S. Co.
Madder
Rotterdam, 1 ck. G. Lawson & Sons
Myraboiams
Bombay, 1,300 packets.
,, 4,382 bgs.
,, 3,707
,, 3,654
Farina—
Stettin, 870 bgs. Wilson, Sons & Co., Ltd.
Harlingen, 738
Ghent, 136 bxs.
Stettin, 200 ,,
Glucose—
Rotterdam, 40 kgs. Hutchinson & Son
Dunkirk, 3 cks. Wilson, Sons & Co., Ltd.
,, 116 bgs.
Manure—
Stettin, 130 bls. Wilson Sons & Co., Ltd.
Ghent, 255 bgs. ,,
,, 204
Nitrate of Soda—
Iquique, 1,273 t. Winter & Maass
Ochre—
Marseilles, 100 cks. Wilson, Sons & Co., Ltd.
Rouen, 38
Plumbago—
Genoa, 50 bgs.
Rosin—
Savannah, 930 cks.
Salammoniac—
Hamburg, 41 cks Wilson, Sons & Co., Ltd.
Soap—
Stettin, 10 chests Wilson, Sons & Co., Ltd.
Marseilles, 20 cs. ,,
,, 1
Rotterdam, 1 G. Lawson & Sons
Soda—
Rotterdam, 8 cks. W. & C. L. Ringrose
Sugar of Lead—
Antwerp, 9 cks. Bailey & Leetham
Sulphate of Ammonia—
Rotterdam, 7 cks. W. & C. L. Ringrose
Sulphur Pyrites—
Huelva, 1,300 t.
Talc—
Genoa, 80 bgs. Wilson, Sons & Co., Ltd.
Tallow—
New York, 400 trcs Wilson, Sons & Co., Ltd
Tartar—
Rotterdam, 5 cks. G. Lawson & Sons
Naples, 3
Tartaric Acid—
Rotterdam, 1 ck. W. & C. L. Ringrose
Tin Oxide—
Rotterdam, 3 cks. G. Lawson & Sons
Turpentine—
Libau, 52 cks.
Savannah, 1,577
Ultramarine—
Rotterdam, 4 cks.
,, 2 cs. Hutchinson & Son
,, 30 G. Lawson & Sons
,, 4 cks. Storry, Smithson & Co.
Waste Salt—
Hamburg, 1,000 bgs. 50t. G. Lawson & Sons
White Lead—
Rotterdam, 12 cks.
,, 1 W. & C. L. Ringrose
,, 9 Sissons Bros. & Co.
Antwerp, 37 Bailey & Leetham
Rotterdam, 14 G. Holmes & Co.
,, 18 Blundell, Spence & Co.
Zinc Oxide—
Rotterdam, 10 cks.

TYNE.

Week ending April 9th.

Ammonia—
Rotterdam, 10 bgs. Tyne S. S Co.
Barytes—
Antwerp, 30 cks. Tyne S. S. Co.
Colours—
Hamburg, 4 cks. Tyne S. S. Co.
Cryolite—
Copenhagen, 1 ck.
Glucose—
Hamburg, 1 bg. Tyne S. S Co.
Phosphate—
Antwerp, 50 bgs. Tyne S. S. Co.
Phosphate Rock—
Beaufort, 1,163 t. Langdales Chemical Manure Co.
Salt—
Hamburg, 1 case. Tyne S. S Co.
Saltpetre—
Hamburg, 5 cks. Tyne S. S. Co.
Stearine—
Antwerp, 6 bgs. Tyne S. S. Co.
Sulphur Ore—
Pomaron, 801 lbs. Mason & Barry
,, 1,200 t. ,,
Sulphur Pyrites—
Huelva 1,815 tns. Scott Bros.
Zinc Oxide—
Antwerp, 20 brls. Tyne S. S. Co

GOOLE.

Week ending March 30th.

Alum—
Rotterdam, 135 cks.
Antimony—
Boulogne, 3 cks.
Bark—
Antwerp, 1,714 bgs.
Caoutchouc—
Boulogne, 5 cks.
Dyestuffs *(otherwise undescribed)*
Boulogne, 49 cks. 12 pkgs. 27 cs.
Phosphate—
Ghent, 814 bgs.
Saltpetre—
Rotterdam, 300 bgs.
Hamburg, 26 cks.
Tannin—
Rotterdam, 20 cks.

GRIMSBY.

Week ending April 2nd.

Caoutchouc—
Hamburg, 1 pkg. 3 cs.
Chemicals *(otherwise undescribed)*
Rotterdam, 2 pkgs. 2 cks.
Hamburg, 37 cks.

EXPORTS OF CHEMICAL PRODUCTS

OF

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending April 13th.

Acid (*otherwise undescribed*)—
Singapore, 11 pkgs. £24
Alkali—
Shanghai, 1 t. 7 c. £4
Rangoon, 3 1
Alum—
Brisbane, 1 t. 2 c. £7
Ammonium Carbonate—
Adelaide, 10 c. £22
Paris, 2 t. 9 69
Halifax, 5 8
Amsterdam, 5 7
Dunkirk, 19 25
Odessa, 2 12 75
Ammonium Nitrate—
Trebizonde, 11 c. £45
Ammonium Sulphate—
Martinique, 40 t. £420
Antigua, 6 62
Jamaica, 4 44
Hamburg, 50 13 c. 520
,, 150 1,575
,, 152 5 1,672
,, 20 8 220
Dunkirk, 15 5 160
Charente, 304 9 3,300
Calicut, 12 10 350
Barbadoes, 85 870
Arsenic—
Sydney, 9 t. 12 c. £121
Amsterdam, 10 cks. 23
Adelaide, 40 drms. 15
Madras, 2 t. 44
Bleaching Powder—
Odessa, 1 t. 8 c. £12
Borax—
Natal, 3 cs. £17
Brown Tartar—
Brisbane, 4 c. £41
Calcium Chloride—
Sydney, 10 t. £36
Carbolic Acid—
Mauritius, 150 drms. £13
Libau, 12 cks. 41
Dusseldorf, 120 544
B. Ayres, 4 cs. 17
Yokohama, 2 t. 5 c. 104
Hamburg, 10 cks. 15
Baltimore, 7 cs. 43
Hiogo, 2 t. 5 c. 104
Rotterdam, 5 13
Carbon Bisulphide—
Sydney, 50 drs. £30
Barbadoes, 8 kgs. 29
Carbonic Acid Gas—
Bombay, 10 cs. £55
Caustic Potash—
Melbourne, 1 t. 14 c. £40
Caustic Soda—
Brisbane, 5 c. £17
Natal, 4 6
Fremantle, 2 t. 4 24
Melbourne, 2 25
Sydney, 5 60
,, 4 10 80
Cape Town, 12 7
Algoa Bay, 20 250
Rockhampton, 11 12 123
Freemantle, 10 19 112
Chemicals (*otherwise undescribed*)
Fremantle, 25 pkgs. £12
Algoa Bay, 14 67
Sydney, 25 29
Citric Acid—
Malaga, 3 c. £24
Philadelphia, 1 t. 10 248
New York, 1 5 182
Hamburg, 3 8 1 ck. 554
Canada, 3 kgs. 24
Halifax, 5 c. 38
Dunedin, 1 kg. 9
Melbourne, 2 c. 8
Adelaide, 1 8
Reval, 10 81
Moscow, 1 t. 160
Antwerp, 10 c. 74
Copper Sulphate—
Paris, 45 t. £702
Bordeaux, 18 10 c. 289
Paris, 25 4 420
Antwerp, 1 2 16
Bordeaux, 4 10 72
Odessa, 4 19 71
Barbadoes, 2 30
Treport, 19 18 275
Copperas—
Sydney, 21 t. 6 c. £44
Cream of Tartar—
Adelaide, 2 t. 5 c. £216
Cairns, 1 cs. 10
Invercargill, 5 23
Melbourne, 1 1 92
Sydney, 1 3 104
Brisbane, 4 41
Townsville, 2 10
Sydney, 1 1 95
Disinfectant—
Trinidad, 1 t. 4 c. £50
Calais, 10 cks. 17
Glycerine—
Baltimore, 6 t. 5 c. £93
Guano—
Jamaica, 1 t. 2 c. £12
Hydrocarbon—
Brussels, 15 c. £19
Hyposulphite of Lime—
Boston, 2 cs. £42
Liquid Ammonia—
B. Ayres, 9 cs. £12
Manure—
Martinique, 25 t £75
Mauritius, 90 250
Rouen, 24 102
Gothenburg, 68 5 c. 285
Hamburg, 49 5 225
Bordeaux, 55 275
Rotterdam, 6 18 36
Bundaberg, 11 8 210
Jamaica, 4 37
,, 6 12 58
Barbadoes, 50 550
,, 50 550
Orotava, 3 15 35
Simon, 10 85
Demerara, 12 126
Barbadoes, 20 220
Myrbane—
Melbourne, 10 c. £32
Phosphoric Acid—
Melbourne, 5 c. £27
Phosphoric Acid (Solid)—
Mackay, 12 t. £218
Phosphorus—
Adelaide, 1 c. £8
Hiogo, 10 cs. 130
Sydney, 10 71
Photographic Chemicals—
Calcutta, 2 pkgs. £74
Potassium Chlorate—
Brisbane, 2 c. £6
Odessa, 5 14
Potassium Cyanide—
Townsville, 5 cs. £28
Salt Cake—
Antwerp, 150 t. £263
Salammoniac—
Halifax, 10 c. £19
Madras, 16 25
Mersyne, 10 16
Constantinople, 2 t. 10 c. 80
Galatz, 9 14
Saltpetre—
Adelaide, 1 t. 10 c. £33
Natal, 10 11
Gibraltar, 7 10 159
Oporto, 2 19 60
Halifax, 1 22
Antwerp, 14 16
Santos, 16 7 368
Wellington, 10 17
Rio de Janeiro, 4 8 99
Melbourne, 2 10 55
Sydney, 2 10 55
Sheep Dip—
Boston, 12 c. £17
Calcutta, 130 drms. 47
Durban, 3 t. 9 c. 106
Soda—
Kingston, 17 c. £4
Hong Kong, 4 4
Soda Ash—
Perth, 3 t. 7 c. £18
Fremantle, 5 6 33
Soda Crystals—
Bremen, 3 t. 5 c. £12
Karachi, 10 33
Sydney, 210 676
Newcastle, 10 4 33
Sodium Acetate—
Sydney, 14 c. £28
Sodium Bicarbonate—
Brisbane, 5 t. £38
Natal, 15 c. 6
Bremen, 2 2 22
Piræus, 10 5
Invercargill, 1 5 10
Dunedin, 1 4 8
Ashburton, 2 8 16
Bombay, 6 3
St. Johns, N.B., 1 13 6
Sodium Carbonate—
Cairns, 3 c. £1
Sodium Hyposulphite—
Boston, 2 cs. £28
Sodum Tartrate—
Canada, 4 cks. £67
Adelaide, 10 c. 35
Brussels, 5 18
Sulphur—
East London, 50 pkgs. £33
Lisbon, 250 brls. 211
Sulphuric Acid—
Natal, 40 pkgs. £2 3
Penang, 10 drs. 14
Madras, 40 cs. 32
Sulphuric Ether—
Karachi, 7 c. £21
Tartaric Acid—
Adelaide, 2 t. 5 c. £259
,, 10 65
Natal, 2 12
Karachi, 2 kgs. 16
Canada, 4 cks. 107
Invercargill, 2 c. 11
Melbourne, 1 t. 1 108
Sydney, 13 72
Fremantle, 2 12

LIVERPOOL.

Week ending April 13th.

Alum—
Galatz, 10 t. 11 c. £55
Constantinople, 6 31
Melbourne, 2 10
Rouen, 1 2 6
Alum Cake—
Dunedin, 3 t. 18 c. 1 q. £11
Aluminoferric—
Stockholm, 10 t. 6 c. £32
Ammonia—
B. Ayres, 7 c. £52
Ammonium Carbonate—
Ibrail, 8 c. 3 q. £15
Marseilles, 4 7
Hamburg, 9 15
Ammonium Chloride—
Calcutta, 16 c. £26
Philadelphia, 14 t. 12 c. 2 q. 339
Sarnac, 3 2 6
Trieste, 2 3 3 71
Havanna, 2 2 5
Bombay, 7 7 242
Ammonium Sulphate—
Ghent, 15 t.
Rio de Janeiro, 1
Messina, 1 1 c. 2 q.
Valencia, 164 8 1
Ghent, 50
Antwerp, 100 8 1
Nantes, 38 12
Arseniate of Soda—
Paris, 2 t.
Barium Sulphate—
Rouen, 1 t. 5 c.
Boracic Acid—
Boston, 7 cks.
Gijon, 2 t. 17 c. 3 q.
Havana, 4 2
Hamburg, 24 5 1
Borax—
Galatz 1 t. 13 c.
Havana, 4 1 q.
Calcium Borate—
Hamburg, 27 t. 2 c.
Rotterdam, 10 4 2 q.
Calcium Chloride—
Philadelphia, 10 t.
Carbolic Acid—
Genoa, 8 c.
New York, 3 t. 2 c. 2 q.
Hamburg, 1 7 2
Dunkirk, 9 14 2
Bombay, 4 1
Philadelphia, 8
Rotterdam, 12
Caustic Potash—
New York, 10 t. 14 c.
Bombay, 5 2 q.
Chemicals (*otherwise undescr*
Genoa, 19 c. 3 q.
Alexandria, 10
Yokohama, 20 cs.
Odessa, 100
Valparaiso, 50
Copperas—
Alexandria, 7 t 7 c.
Syria, 3 9 3 q.
Kurrachee, 11 7
Copper Sulphate—
Tarragona, 2 t. 3 c.
Kentville, 10
Leghorn, 4 16 2 q.
Odessa, 4 13 3
Valparaiso, 4 9 1
Bordeaux, 242 1 3
B. Ayres, 2 4 3
Ibrail, 1
Venice, 7 19
Rouen, 165 15
Antwerp, 10
Leghorn, 11 5
Bordeaux, 25 2
Batoum, 9 18 1
Varna, 1 10
Ghent, 10
Barcelona, 9 19
M. Video, 2 10 2
Bordeaux, 91 18
Nantes, 11 5
Cream of Tartar—
Halifax, 1 t. 3 c. 1 q.
Guano—
Malaga, 20 t. 3 c.
Magnesium Chloride—
Bombay, 9 t. 17 c.
Manure—
Bordeaux, 49 t. 5 c.
Nitric Acid—
Bahia, 2 c.
Potassium Bicarbonate—
N. York, 10 c.
Potassium Bichromate—
Eagle Pass, 8 c. 1 q.
Bordeaux, 3 t. 6
Potassium Carbonate—
N. York, 7 t. 2 c.

ium Chlorate—

a,	2 t.	6 c.		£154
Janeiro,	10			510
irne,	7	10		342
ie,		7		16
	7	10		346
	1	10		74
k,	18	5		910
irg,	1			56
	2			94
	2	10		119
	5			253
,	5			228

ate of Potash—

Pass,	5 c.			£28

ake—

ore,	256 t	3 c.		£678

tre—

nbuco,	4 t.	6 c.		£110
io,	1			25
		15		17
ello,	1			22
dam,		18		20
ia, B.C.,		7		8
s,	9	15		211
mbuco,	6	8	2 q.	144
		12	2	16

Dip—

ston,	23 t.	10 c.		£85
Arenas,		11	1 q.	95
ndon,		9	1	21
io,		5		5
rancisco,	5	15	3	151

m Biborate—

ork,		8 c.	3 q.	£13
Cruz,	3 t.	1	2	92
	2	3	1	66

m Bichromate—

a,		12 c.	1 q.	£18

m Chlorate—

burg,	2 t.			118

m Nitrate—

a,	2 t.	10 c.	2 q.	£21
ga,	2	9	2	24
cia,	6	3	1	57

of Lead—

tta,	1 t.	6 c.		£44

ur—

n,	667 bgs.			£519
achee,	150 brls.			1,621
uan,	3 t.	2 c.	3 q.	24
burne,	2	0	3	14
n,	100			602
ira,	2	5		20

uric Acid—

le Janeiro,	1 t.	12 c.	1 q.	£35

Chloride—

ay,	1 t.	12 c.	2 q.	£26

GLASGOW.

Week ending April 2nd.

s Acid—

York,	£36

onium Sulphate—

ente,	101¼ t.	£1,033
York,	36	373

nony—

fax,	2 t.	£98

ome—

stiania,	2 cks.	£21
n,	6083¼ c.	925
erp,	263	358

hing Powder—

ourne,	7 t.	9 c.	£50
ey,	12	9	86

ide of Lime—

ourne,	6 t.	3 c.	£50

ine—

ourne,	20 c.		£25

m Salts—

stiania,	200 c.		£35

ed Oil—

sh Columbia,	2 t.	14½ c.		£60
a,		89½		£91
ourne,	3	2½		66
ey,		63¼		64

ire—

a,	128 t.	2 c.		£725

tha—

en,	14 t.	15¼ c.		£193

hloride of Tin—

bay,	12¾ c.	£28	10s.

ers' Colours—

erdam,	24 pkgs.	£32	
mbo,	102½ c.	51	
a,	28⅝	£24	15s.
ourne,		£27	
ey,		£11	15s.

Paint—

Valparaiso,	21 t.	8 c.	£352
Alexandria,	6¾		28
Colombo,	29¾		38
Sydney,	158¾		145

Patent Indigo—

Melbourne,	62¼ c.	£119

Pitch—

Bombay,	16 t.	2 c.	£36
,,	21	6½	50
Valparaiso,	40		69
Calcutta,	10	16	25
Caen,	300		

Potassium Bichromate—

Rotterdam,	1 ck.	£14
,,	7	

Rosin—

Bombay,	23 t.	2¼ c.	£91
Calcutta,	5	5	25

Salt Cake—

Antwerp,	16½ c.	£520

Soap—

New York,	5 t.	6¾ c.	£100
Valparaiso,	5	5½	51
New York,	2	2	25

Sodium Bichromate—

Rotterdam,	4 cks.	£45

Sulphuric Acid—

Madras,	11 t.	3¼ c.	£52
Sydney,			25

Tar—

New Fairwater,	1,403 brls.		£776
Colombo,	10 t.	12 c.	22
Madras,	38	1	96
Calcutta,	21	12	49

Turpentine—

Colombo,	50 glns.	£7
Malta,	3¾ c.	£4 14s.

Varnish—

Sydney,		£66

Verdigris—

Melbourne,	3¾ c.	£31

White Lead—

Halifax,	9 t.	13 c.	£128
Melbourne,	3	2½	86
Sydney,	17	196¼	594

HULL.

Week ending April 9th.

Alkali—

Fiume,	4 cks.
Stettin,	18

Aluminoferric—

Copenhagen,	120 cks.

Bleaching Powder—

Bremen,	7 cks.
Harlingen,	33
Leghorn,	34
Naples,	32
Stettin,	33

Borax—

Amsterdam,	11 cks.

Caustic Soda—

Antwerp,	37 drms.
Libau,	5/
Leghorn,	¼
Stettin,	36

Chemicals (*otherwise undescribed*)

Amsterdam,	12 pks.		
Antwerp,	33 cs.		
Christiania,	24	1,426 slabs.	52 cks. 7 pkgs.
Copenhagen,	3	20 pks.	
Genoa,	41	60	4 cks.
Gothenburg,			22
Harlingen,			20
Hamburg,	133		1
Libau,			9
Messina,			3
Marseilles,			1 10
Rotterdam,	40		42
Reval,	9		
Trieste,			4

Cottonseed Oil—

Amsterdam,	306 c
Antwerp,	1,099
Bergen,	10
Christiania,	34
Copenhagen,	289
Flushing,	286
Fiume,	103
Hamburg,	1,430
Konigsberg,	300
Leghorn,	199
Marseilles,	198
Rouen,	4
Rotterdam,	1,436
Stettin,	505
Trieste,	599

Dyestuffs (*otherwise undescribed*)

Antwerp,	2 cks.	
Christiania,		100 bgs.
Dunkirk,	80 brls.	
Hamburg,	1	
Rouen,	5	
Stettin,	1	

Fuller's Earth—

Genoa,	20 bls.

Linseed Oil—

Antwerp,	99 c.
Bergen,	206
Bremen,	61
Christiania,	579
Christiansand,	75
Copenhagen,	75
Hamburg,	383
Rotterdam,	289
Stavanger,	18
Stettin,	199

Manure—

Dunkirk,	95 t.
Leghorn,	96 brls.
Stettin,	235

Mineral White—

Antwerp,	50 bls.
Genoa,	100

Ochre—

Hamburg,	24 cks.

Painters' Colours—

Antwerp,	4 cs.	50 cks.	
Bergen,		2	140 drms.
Christiania,			20 62 pks.
Christiansand,			200
Copenhagen,	2	5	
Dunkirk,	7		
Fiume,		2	
Genoa,		20	8
Gothenburg,		2	
Hango,		2	
Hamburg,		12	
Marseilles,		10	
Rouen,		15	
Rotterdam,		41	
Reval,	1		
Stettin,		7	
Trieste,		4	
Venice,	2		4

Paint—

Antwerp,	78 cks,

Pitch—

Antwerp,	130 t.
Leghorn,	290
Venice,	72

Soap—

Bergen,	42 cs.

Tallow—

Amsterdam,	7 cks.
Flushing,	5

Tar—

Antwerp,	46 cks.
Bergen,	5
Bremen,	2
Copenhagen,	20
Gothenburg,	5
Hamburg,	2
Libau,	10

Varnish—

Amsterdam,	5 cks.	
Christiania,		1 cs.
Gothenburg,	2	
Hamburg,	14	
Rouen,		2
Rotterdam,	4	

TYNE.

Week ending April 9th.

Alkali—

Christiania,	20 t.	4 c.

Alum—

San Francisco,	30 t.	2 c.

Barytes—

Hamburg,	111 t.	7 c.

Binoxide of Barium—

Dunkirk,	4 t.	3 c.

Bleaching Powder—

Antwerp,	62 t.	2 c.
Hamburg,	105	5
,,	4	19
Dunkirk,	10	
Malmo,		11
Horsens,	9	19
Copenhagen,	42	
Huelva,	10	2
Rotterdam,	46	2
Gothenburg,	9	18
San Francisco,	50	16
Drontheim,	9	18
Gothenburg,	4	19

Carbonate of Barytes—

Hamburg,	10 t.

Caustic Soda—

Antwerp,	42 t.	16 c.
Hamburg,	17	14
Copenhagen,	2	18
Constantinople,	200	
Gothenburg,	4	19

Creosote—

Constantinople,	150 cks.

Hydrate of Barytes—

Hamburg,	19 c.

Litharge—

Copenhagen,	5 c.

Magnesia—

Antwerp,	3 c.
Hamburg,	9

Salt—

Hamburg,	3 c.

Soap—

Hamburg,	1 ck.
Drontheim,	12 c.

Soda—

Hamburg,	7	bgs.
,,	1 t.	9 c.
Rotterdam,	4	15
Gothenburg,	5	2

Soda Ash—

Antwerp,	13 t.	1 c.
Hamburg,	1	11
Gothenburg,	26	13
San Francisco,	50	1
Gothenburg,	35	

Sodium Sulphate—

Hamburg,		4 c.
Genoa,	5 t.	6
,,	1	6
Copenhagen,		12
Gothenburg,	10	6

Sulphur—

Christiania,	25 t.
Copenhagen,	50
Gothenburg,	25

Sulphate of Ammonia—

Dunkirk,	20 t.

Superphosphate—

Copenhagen,	4 t.	18 c.

Yarnish—

Hamburg,	1 bottle.

White Lead—

Copenhagen,		17 c.
Gothenburg,	4 t.	2

GOOLE.

Week ending March 30th.

Benzol—

Rotterdam,	98 cks.

Chemicals (*otherwise undescribed.*)

Boulogne,	10 cks.	
Ghent,	7	
Rotterdam,	47	4 cs.

Coal Products—

Ghent,	10 cks.
Boulogne,	131
Rotterdam,	95

Dyestuffs (*otherwise undescribed*)

Ghent,	4	cks.
Rotterdam,	9	

Manure—

Antwerp,	178 bgs.
Dunkirk,	46
Ghent,	2,923
Rouen,	126

Pitch—

Antwerp,	887 t.

GRIMSBY.

Week ending April 2nd.

Chemicals (*otherwise undescribed*)

Dieppe,	181 pkgs.		
Hamburg,	18 cs.	2 cks.	16 dms.
Rotterdam,	3 pkgs.		

Coal Products—

Dieppe,	96 cks.

Dyestuffs (*otherwise undescribed*)

Dieppe,	2 cs.	4 cks.

Manure—

Esbjerg,	1,900 bgs.

Pitch—

Antwerp,	48 t.

PRICES CURRENT.

WEDNESDAY, April 20th, 1

Prepared by Higginbottom and Co., 116, Portland Street, Manchester.

The values stated are f.o.r. *at maker's works, or at usual ports of shipment in U.K. The price in different localities may*

	£	s.	d.
Acids:—			
Acetic, 25 % and 40 % .. .. per cwt.	7/- &	11/-	
,, Glacial .. .. ,,		50/-	
Arsenic, S.G., 2000° .. .. ,,	0	13	6
Fluoric .. .. per lb.	0	0	3¼
Muriatic (Tower Salts), 30° Tw. .. .. ..per bottle	0	0	10
,, (Cylinder), 30° Tw. .. .. ,,	0	3	0
Nitric 80° Tw. .. .. per lb.	0	0	2¼
Nitrous .. .. ,,	0	0	1¾
Oxalic .. .. nett ,,	0	0	3
Phosphoric, 1750° .. .. ,,	0	1	2½
Picric .. .. ,,	0	0	10¼
Sulphuric (fuming 50 %) .. .. per ton	15	10	0
,, (monohydrate) .. .. ,,	5	10	0
,, (Pyrites, 168°) .. .. ,,	3	5	0
,, (,, 150°) .. .. ,,	1	5	0
,, (free from arsenic, 145°) .. .. ,,	1	7	6
Sulphurous (solution) .. .. ,,	2	15	0
Tannic (pure) .. .. per lb.	0	1	2
Tartaric .. .. ,,	0	1	1
Arsenic, white powdered .. .. nett per ton	11	0	0
Alum (loose lump) .. .. ,,	5	5	0
Alumina Sulphate (pure) .. .. ,,	5	0	0
,, ,, (medium qualities) .. .. ,,	4	15	0
Aluminium .. .. per lb. 2s. 8d. to	0	3	2
Ammonia, ·880=28° .. .. per lb.	0	0	3
,, =24° .. .. ,,	0	0	1¾
,, Carbonate .. .. nett ,,	0	0	3¼
,, Muriate .. .. per ton	21	0	0
,, ,, (sal-ammoniac) 1st & 2nd .. per cwt.	35/- &	33/-	
,, Nitrate .. .. per ton	40	0	0
,, Phosphate .. .. per lb.	0	0	10½
,, Sulphate (grey), London .. .. .. per ton	10	7	6
,, ,, (grey), Hull .. .. ,,	10	5	0
Aniline Oil (pure .. .. per lb.	0	0	7
Aniline Salt ,, ... ,,	0	0	6½
Antimony .. .. per ton	45	10	0
,, (tartar emetic) .. .. per lb.	0	1	0
,, (golden sulphide) .. .. ,,	0	0	10
Barium Chloride .. .. per ton	7	10	0
,, Carbonate (native) .. .. ,,	3	10	0
,, Sulphate (native levigated) .. .. .. ,,	45/- to	75/-	
Bleaching Powder, 35 % .. .. nett ,,	7	10	0
,, Liquor, 7 % .. .. ,,	2	10	0
Bisulphide of Carbon .. .. ,,	11	15	0
Chromium Acetate (crystal .. .. per lb.	0	0	6
Calcium Chloride .. .. per ton	2	5	0
China Clay (at Runcorn) in bulk .. .. .. ,,	17/6 to	35/-	
Coal Tar Dyes:—			
Alizarine (artificial) 20 % .. .. per lb.	0	0	8¾
Magenta .. .. ,,	0	3	9
Coal Tar Products			
Anthracene, 30 % A, f.o.b. London .. per unit per cwt.	0	1	2½
Benzol, 90 % nominal .. .. .. per gallon	0	1	10
,, 50/90 ,, ... ,,	0	1	6
Carbolic Acid (crystallised 40°) .. .. .. per lb.	0	0	4⅞
,, (crude 60°) .. .. per gallon	0	1	2
Creosote (ordinary) .. .. ,,	0	0	1
,, (filtered for Lucigen light) .. .. .. ,,	0	0	2
Crude Naphtha 30 % @ 120° C. .. .. .. ,,	0	0	10
Grease Oils, 22° Tw. .. .. per ton	2	5	0
Pitch, f.o.b. Liverpool or Garston .. .. .. ,,	1	14	0
Solvent Naphtha, 90 % at 160° .. .. .. per gallon	0	0	11½
Coke-oven Oils (crude) .. .. ,,	0	0	3
Copper .. .. per ton	46	0	0
,, Sulphate .. .. ,,	15	10	0
,, Oxide (copper scales) .. .. ,,	45	0	0
Glycerine (crude) .. .. ,,	13	0	0
,, (distilled S.G. 1250°) .. .. ,,	45	0	0
Iodine .. .. nett, per oz.	0	0	9
Iron Sulphate (copperas) .. .. per ton	1	12	6
,, Sulphide (antimony slag) .. .. ,,	2	0	0
Lead (sheet) for cash .. .. ,,	12	5	0
,, Litharge Flake (ex ship) .. .. ,,	14	5	0
,, Acetate (white ,,) .. .. ,,	25	10	0
,, ,, (brown ,,) .. .. ,,	17	10	0
,, Carbonate (white lead) pure .. .. .. ,,	20	0	0
Nitrate .. .. ,,	20	5	0
Lime, Acetate (brown) .. .. per ton	6		
,, ,, (grey) .. .. ,,	10		
Magnesium (ribbon and wire) .. .. per oz.	0		
,, Chloride (ex ship) .. .. per ton	2		
,, Carbonate .. .. per cwt.	1	17	
,, Hydrate .. .. per ton.	17		
,, Sulphate (Epsom Salts) .. .. .. per ton	2	15	
Manganese, Sulphate .. .. ,,	17	15	
,, Borate .. .. per cwt.	2	15	
,, Ore, 70 % .. .. per ton	4	5	
Methylated Spirit, 61° o.p. .. .. per gallon	0	2	
Naphtha (Wood), Solvent .. .. ,,	0	4	
,, ,, Miscible, 60° o.p. .. .. .. ,,	0	4	
Oils:—			
Cotton-seed .. .. per ton	19	10	
Linseed .. .. ,,	20	0	
Lubricating, Scotch, 890°—895° .. .. .. ,,	7	5	
Petroleum, Russian .. .. per gallon	0	0	
,, American .. .. ,,	0	0	
Potassium (metal) .. .. per oz.	0	3	
,, Bichromate .. .. per lb.	0	0	
,, Carbonate, 90% (ex ship) .. .. .. per ton	18	0	
,, Chlorate .. .. per lb.	0	0	
,, Cyanide, 98% .. .. ,,	0	2	
,, Hydrate (Caustic Potash) 80/85 % .. per ton	22	10	
,, ,, (Caustic Potash) 75/80 % .. ,,	21	0	
,, ,, (Caustic Potash) 70/75 % .. ,,	20	15	
,, Nitrate (refined) .. .. per cwt.	1	2	
,, Permanganate .. .. per cwt.	3	10	
,, Prussiate Yellow .. .. per lb.	0	0	
,, Sulphate, 90 % (ex ship) .. .. .. per ton	9	15	
,, Muriate, 80 % (do.) .. .. .. ,,	7	17	
Silver (metal) .. .. per oz.	0	3	
,, Nitrate .. .. ,,	0	2	
Sodium (metal) .. .. per lb.	0	3	
,, Carb. (refined Soda-ash) 48 % ..nett per ton	6	2	
,, ,, (Caustic Soda-ash) 48 % . ,, ,,	5	5	
,, ,, (Carb. Soda-ash) 48% .. .. ,, ,,	5	7	
,, ,, (Carb. Soda-ash) 58 % .. .. ,, ,,	6	5	
,, ,, (Soda Crystals) .. .. .. ,, ,,	3	9	
,, Acetate (ex-ship) .. .. ,,	16	15	
,, Arseniate, 45 % .. .. ,,	10	10	
,, Chlorate .. .. per lb.	0	0	
,, Borate (Borax) .. .. nett, per ton.	30	0	
,, Bichromate .. .. per lb.	0	0	
,, Hydrate (77 % Caustic Soda)(f.o.b.)nett pr. ton	11	10	
,, ,, (74 % Caustic Soda) ,, ,, ,,	11	10	10 ton lots
,, ,, (70 % Caustic Soda) ,, ,, ,,	10	10	
,, ,, (60 % Caustic Soda) .. ,, ,,	9	7	
,, ,, (60 % Caustic Soda, cream) (f.o.b.) ,,	9	2	
,, Bicarbonate .. .. ,,	6	12	
,, Hyposulphite .. .. ,,	7	15	
,, Manganate, 25% .. .. ,,	9	0	
,, Nitrate (95 %) ex-ship Liverpool .. ..per cwt.	0	8	
,, Nitrite, 98 % .. .. per ton	30	0	
,, Phosphate .. .. ,,	15	10	
,, Prussiate .. .. per lb.	0	0	
,, Silicate (glass) .. .. per ton	5	7	
,, ,, (liquid, 100° Tw.) .. .. .. ,,	4	5	
,, Stannate, 40 % .. .. per cwt.	3	5	
,, Sulphate (Salt-cake) .. .. per ton.	1	17	
,, ,, (Glaubér's Salts) .. .. ,,	1	15	
,, Sulphide .. .. ,,	7	15	
,, Sulphite .. .. ,,	6	12	
Strontium Hydrate, 100% .. .. ,,	8	10	
Sulphocyanide Ammonium, 95 % .. .. per lb.	0	0	
,, Barium, 95 % .. .. ,,	0	0	
,, Potassium .. .. ,,	0	0	
Sulphur (Flowers) .. .. per ton.	10	0	
,, (Roll Brimstone) .. .. ,,	7	10	
,, Brimstone: Best Quality (nominal) .. ,,	5	5	
Superphosphate of Lime (26 %) .. .. ,,	2	7	
Tallow .. .. ,,	26	10	
Tin (English Ingots) .. .. ,,	97	0	
,, Crystals .. .. per lb.	0	0	
Zinc (Spelter) .. .. per ton	22	5	
,, Chloride (solution, 96° Tw.) .. .. .. ,,	6	10	

THE

CHEMICAL TRADE JOURNAL

AND

OIL, PAINT and COLOUR REVIEW.

Publishing Offices: 32, BLACKFRIARS STREET, MANCHESTER.

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TENDER.

GLASGOW CORPORATION GAS.

DUAL PRODUCTS FOR SALE AND RESIDUAL PRODUCT WORKS TO LET.

The Glasgow Corporation Gas Commissioners are pared to receive TENDERS for (1) The purchase of the TAR and IIACAL LIQUOR produced at their Temple Farm and Old Gas-Works for the period from the 1st of June, 1892, to the 31st of May, the purchase of the TAR and AMMONIACAL LIQUOR produced at lokshaws Gas-Works for the same period; and (3) a LEASE of the AL PRODUCT WORKS, in West-street, Glasgow, recently acquired rporation from the Glasgow Alum and Ammonia Company, Limited, for from the 15th of May, 1892, to the 11th of November, 1893.

of Tender for the Residual Products on which offers must be made, and Admission to inspect, and all other particulars with reference to the Product Works, may be had on application to the Manager at the Gas , John-street, Glasgow; and offers, endorsed "Tender for Residual " or "Tender for Residual Product Works,' will be received by the r on or before Tuesday, the 3rd of May, 1892.

mmissioners do not bind themselves to accept the highest or any tender.

J. D. MARWICK,
Town Clerk.

ambers, George Square
gow, April 20th, 1892.

Notices.

communications for the *Chemical Trade Journal* should be ed, and Cheques and Post Office Orders made payable to—

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rtisements intended for insertion in the current week's iss ue reach the office by **Wednesday morning** at the latest.

WHAT IS A PUBLIC NUISANCE?

AT first sight the above question would appear almost supervacaneous, for surely, seeing we have the Public Health Act, and then the Public Health Amendment Act, of 1890, and the Alkali Act, there ought to be no "possible, probable shadow of doubt" as to what actually constitutes a public nuisance.

To amplify the import of our query, and to give the same the more comprehensive bearing which we wish it to possess, we should further add that although it may be no Herculean task to define in the sense of the Act what is, and what is not, a public nuisance; yet when it comes to the enforcement of the Act in one case and not in another, where apparently it should apply with equal force, then the question, What *is* a public nuisance? arises almost spontaneously.

We are not aware that there is any classification or distinction of offensive smells. They are generally accepted as being obnoxious, and therefore fit ground for action if their emission causes inconvenience to the public. If such be the case a smell of organic origin should be treated in the same way as a smell arising from an inorganic body.

Again, given two smells, both of which though not identical in their origin or nature, are nevertheless malodorous, it can hardly be too presumptuous to assume that both of them should share equally the *onus* of satisfying the requirements of the Public Health Amendment Act, or else suffer to the same degree for not so doing.

But unfortunately in the face of recent proceedings in Cheshire, these premises stand contradicted, and therefore nullified, for in the case of two works, one situated in a field some hundreds of yards from the high road, and the other close to the same road, the former owing to an accident emitted a smell which was undoubtedly of a deleterious and highly offensive nature. Consequently, the Local Board brought an injunction against these works to restrain them from allowing this smell to escape. Moreover, this action was taken largely at the instigation of the neighbouring works, who presumably suffered inconvenience through the escape of these objectionable gases. Now the occurrence was an accidental one, and in all probability, under the usual regime of inspection, would not take place again. Still, of course, the case was carried through, and a lot of time, trouble and money spent in securing the abatement of an incidental nuisance which no longer exists.

But, it may be asked, What about the neighbouring works who called attention to the nuisance and gave prominence to the matter?

Well, there certainly are cases where the pot acquaints the kettle of its Ethiopic hue, but in such a case as this anyone of an easy-going or uninquiring nature would be disposed to assume *ipse facto* that those who complained were not tarred with the same brush. But was such the case? That is just where the rub comes. As a matter of fact, the neighbouring

works have from time immemorial, by the storage of putrid and decaying matter instituted a hot bed for the germination of disease spreading microbes, to the full advantage of which they have subjected the public for long enough and continue to do so. The smell given off from the first mentioned works even if objectionable in the extreme, and to a certain degree poisonous, could hardly have been more so than the purulent and stercoraceous odours emitted from the latter.

The difficulty of stating what is a public nuisance will now perhaps evince itself, that is if the question is to be answered in accordance with the evidence afforded by substantial facts, as opposed to theoretical and imaginary deductions; for here are two cases, which, we will go so far as to say, are both upon a common level as regards their offensiveness and violation of sanitary laws. Yet so to speak, one is taken and the other left. Which then was the *bonâ fide* nuisance,—and if one, why not both?

COLOUR TESTING.

By C. W. Wilson.

(Continued from page 275.)

YELLOW AND ORANGE CHROMES.

THESE colours are particularly susceptible to adulteration. Some years ago it was really difficult to find one of these colours that was over 50 per cent. pure, 30 to 35 per cent. was the general standard. Even now where one may be found pure, a dozen are adulterated, and nearly every grinder has what he calls his commercial grade, which is about one-half adulteration, and this so-called commercial grade is not labelled so as to distinctly state its quality; the unwary, or anyone who looks at the price instead of the value, is frequently deceived by such.

Chrome colours are combinations of chromic acid and oxide of lead for the medium and deeper shades, and of chromic acid, sulphuric acid, and oxide of lead for the paler shades, lemon, canary, &c.

It is a singular fact that sulphate of lead as such, cannot be mixed with pure chromate of lead to produce the pale shades of good bright colours. They must be precipitated together, and on that account many chemists claim that they are definite chemical compounds, known as double salts. To explain what I mean, you cannot take a pure medium chrome, which chemically speaking is a natural chromate of lead, and by any mixture with any lead white produce the bright colour of lemon chrome; and the tints from a medium chrome are essentially different from those made with lemon.

PALE CHROMES.

Now the great desideratum is to get the minimum paleness of shade with the minimum of sulphuric acid; or with the maximum of chromic acid: that is, to obtain the minimum paleness of shade with the maximum of staining power, the tint produced to be, of course, clear and canary like.

It is well known to many colour makers that when these pale shades are made under certain conditions, they are less crystalline and greater density and strength are obtained; but the colour is liable to quick decomposition and will rapidly blacken. A pale chrome that has a tendency to a greenish hue may always be suspected; nearly every colour maker has followed this *ignis fatuus* to his dismay.

Pale chromes must not be used on fresh plaster; it turns them to the orange shades; several coats of lead and oil should be placed between the colour and the plaster. The orange chromes are not materially affected. The difference between these and the medium is in their containing a greater percentage of oxide of lead; or, what the chemists call basic chromates. You will notice that as the shade deepens the strength lessens, but each shade has its distinctive tint. It is a greater temptation with some painters to give these tints with orange mineral, and it is no uncommon thing to find orange mineral in the deeper shades. Orange mineral, however, is very unreliable in tints of any kind, and I strongly advise against its use, and again it has not even a fourth or a third of the staining power of pure chrome.

The presence of any considerable quantity of orange mineral is shown by the nitric acid test. Nitric acid, you will notice, turns the pure chrome orange to a bright yellow; while the one containing orange mineral is badly discoloured. In the one case the acid combines with some of the lead, reducing the chrome to the paler shade, while in the other it does this for the chrome and turns the red oxide of lead to a brown, giving by mixture the peculiar olive colour you notice.

MEDIUM CHROMES.

Something should be said about the medium chrome. The in making it is to produce a colour that is free of buff tone eit pure colour or its tints. The one exhibited, you will note, clear golden tint with white lead; a poorly-made mediun while it may be perfectly pure and of chemical formula, ver neutral chromate, will make buff tints.

It is found that a proportion of zinc white, say a fourth mixed with the white leads used for tints, has the property the colour better. This is well worth remembering, but clear tints, nothing but the finest quality of zinc white shou with the white lead. To sum up concerning the chrom samples of pure colours for comparison; test adulteration strength; note carefully that the pale shades do not incline ness in time, for such are certain to blacken quickly, mixed with white lead. Note carefully the grinding, which perfectly fine, on glass, under the knife, not the faintest tra should be found in the pure article. An abnormally brig chrome may be suspected of being adulterated with orang

A good orange mineral really brightens an orange chrom have said, is a dangerous element in it.

Pure chromes of medium and paler shades are so strong used for solid colour a considerable proportion of white le mixed with them without materially affecting the tone. T strong in body that they may be worked out very thin and perfectly, so that in every way they are cheaper than the red to their superior economy for tinting or staining that is s that it need not be dwelt upon.

OCHRES.

This group offers a field which could not be covered fully so that the short space that I now have will not permit n said.

We all regard French ochre as the standard of quality. T deposits are certainly very fine, the finest that so far hav covered. There are some excellent American ochres, but deposits have been opened up which give a product eq selected French for body and brightness.

YELLOW OCHRE.

Yellow ochres are minerals which owe their colouring t iron, the oxide in this case being, however, the hydrated oxi combined with water. When an ochre is calcined, the wate tion is dissipated, leaving the red oxide. In this way is ob pigment known as light red, much used by artists. The stituents of ochre are principally silicate of alumina or cla silica. When the clay is present in large quantity the pigme work well and is usually very transparent.

One might think that the value of an orchre would de contents of oxide of iron, but that is not a reliable guide to q

Experience has proven that there isn't anything superior to a pure ochre of the French type, and these fictitious a dangerous and deceptive, because they do not have tha property of holding fast to the grain of the wood which is p the genuine article. The very cheap ochres are nearly all b the oil is some oil substitute consisting principally of petroleum. It is difficult to understand why such mixtures and only those in the trade know what quantities are sold.

Stone ochre, Dutch ochre, etc., are names given to vari from different localities, but none of them have for the practi any particular interest. An Englishman will want stone ochr ochre, because it is much used in England. Much ochre is s England States as stone ochre, because that name has a foo Some of this stone ochre is good and some very poor. I do one pound out of a hundred is genuine English stone och that would not hold its own against a good French. The Fr is standard because it is the best all-round ochre.

Gold ochre is invariably a mixture of chrome yellow and o brightened ochre. The standard for this should be a mixtur French ochre with pure chrome yellow; the deep shade ma deep chrome, and the pale shade made with a pale chrome.

BLACKS.

The coach drop and ivory black sold for house painter almost exclusively finely prepared bone blacks. Sometin added to intensify the colour. The articles of this list de coach and drop black are blued blacks. The blacks of thi useful only for their intensity of colour. Lamp black, the has a grayish tone in comparison. These blacks are not eco staining, but are necessary sometimes to produce a particu tint that cannot be obtained from lamp black.

[The panels exhibited represented the tints of blue bone plain bone black and lamp black, all at rate of one part of c to ten of white lead in oil. The lamp black tint was a black the others.]

Bone blacks vary much in their colour and opacity, hence careful selection must originally be made; then they must be ground very fine; they are difficult to grind and require the best skill of the miller. The average product of a 30 inch burr stone mill is not a hundred pounds daily of fine dry black; that is so many grindings are necessary that the daily product of the mill is reduced to these small figures.

[A sample of the dry bone black was exhibited showing how finely it must be prepared before it can be ground in oil.]

It is this cost of preparation and manipulation which makes this sort of black comparatively expensive.

It is not possible to give any rules for testing drop blacks practically without the use of standard sample. A given weight of the oil colour evenly spread over a given surface of glass would be one plan to determine its quality, but that requires very nice manipulation; admixture of lamp black improves the opacity, but seriously impairs the intensity of colour. There is only about ten per cent. actual carbon in bone black, the other ingredients being the lime compounds of the bone, principally phosphate of lime. Sometimes carbonate of lime is present in small quantities, so that an analysis showing its presence would not indicate adulteration with whiting or Paris white, unless it was considerably greater than, say, five per cent. An interesting dispute between chemists took place some time ago on this very point, but it was conclusively shown that carbonate of lime was generally present in small quantities. These points serve to emphasise the necessity of the chemist employed to make paint analyses, being quite familiar with the practical side of the question if he is to draw conclusions from his analyses.

There is very little genuine ivory black used by the house painter, and he really does not need it. This article belongs to the carriage painter almost entirely. It will show a more intense colour than the bone black, but when ground very fine in oil the particles will not lay together so closely when applied by the brush, so that under ordinary conditions it would be said not to have the same body.

The difference between ivory and a good bone black is only noticed on close comparison, and the latter is as jet a black as the house painter or decorator is likely to require.

There is no need for further comment upon blacks, except perhaps in reference to the quantity of oil that they require in mixing, moreover, a black largely adulterated with barytes does not require any more oil than a pure one, a fact which is rather an anomaly.

(To be continued.)

THE POLLUTION OF THE RIVER DOUGLAS.

REPORT OF THE INSPECTOR.

A MEETING of the Joint Committee for the Purification of the River Ribble and its tributaries was held on Monday, 25th inst., in the County Offices, Preston. The Right Hon. J. T. Hibbert presided.

Mr. W. Naylor (the chief inspector) read the following report:—"The Chairman and Members of the Ribble Joint Committee.—Gentlemen,—The basins of the Douglas and Alt rivers have occupied the attention of your inspectors during the past month. Nothing on the latter river calls for special mention in this report, but the present condition of the Douglas is serious. This river will require most patient labour, and maybe strong measures to bring it to a reasonable state of cleanliness. Compared with others in the county, its valley throughout the course is narrower, while the population is more dense; thus the disadvantage of lesser volume is coupled with the greater probability of pollution. The population affecting the river is 240,000, on an area of 171 square miles. While completing what may be termed the "flying survey" of the watershed, opportunity has been found of visiting all the sewage purification processes in the Douglas area, as entered in the returns presented by the Clerk to the Joint Committee at the last meeting of this committee. Out of the nineteen authorities there entered, none employ precipitants to be followed by irrigation of land, three employ precipitants alone, nine possess farms, and the remaining seven are as yet unmoved in the matter. These figures will not tally with the returns, but are compiled from conditions of things at dates of inspection. The remarks made upon the farms of the Ribble upper section apply equally here; mere possession of a sewage farm is a handy shelter for authorities when questioned as to methods of disposal, but the proper and efficient utilisation of that farm is another matter often painfully distinct. *In this watershed I have inspected 16 sewage farms, but cannot imagine that the river would suffer any further pollution were about 13 of them annihilated.* On the Douglas, as elsewhere, they are to be found with the indispensable settling tanks, where no settling takes place, but over which the sewage flows across land—not carefully and patiently trenched with serpentine carriers so as to obtain the maximum run on the maximum area—but straight, as the crow flies, down the river. In addition to the careless mode of distribution, there is a tendency to sub-let the farms to tenants—a procedure to be unhesitatingly condemned. Six farms out of the nine on the Douglas are sub-let, viz., Leyland, Standish, Billinge, Pemberton, Skelmersdale, and Ormskirk. The object of the tenant is not sewage purification, but, naturally enough, profitable farming; and he, in spite of all moral or legal obligations to the contrary, works with this object mainly in view. Leyland, as an example, is returned as being subject to the 'Intermittant downward filtration system,' whereas on the date of inspection no fractional part of the sewage was traversing the filtration area, and the tenant farmer openly declared his intention of putting no more on, as it could only entail greater loss than that he had already experienced, which, with the rent, he proved to be serious. Small sewage farms cannot be made to realise a profit, and it is patent to the most casual observer that they are laid out for the least loss. Herein lies the error. Little loss indeed need occur if the farm is only large, while some can be instanced making small profits. It is against common sense and the natural evolution of vegetable life to flood a small tract of land constantly with the sewage of human beings in multitudes; the soil becomes sickened and begets only rank weeds. To grow crops profitably there must be a cessation of flooding at certain periods of growth independent of seed time and harvest. On large farms a portion can be held in reserve, to be irrigated only when an abundance on succulent roots would cause them to rot, when the land should be dry for weeding purposes, when straw would be forced at the expense of grain, at seed times and harvests, or emergencies. Where the farm is small no such tract can be reserved, and the result is two or three hungry-looking sheep pulling up rotten vegetation by the roots, where bullocks ought to be fattening on rye-grass. But apart from the financial aspect, which on the question of public health should be secondary, the larger the farmer the better the effluent, other things being equal. Further, of the various processes, whose number is legion, for the purification of sewage, experts are now fairly agreed that the old-fashioned and most natural method of land filtration is the best, and that it should be adopted where possible. In this basin it is even more desirable as dispensing with the use of precipitants. Where these can be dispensed with without interfering with due purification, the river is benefited for industrial purposes, and though at present only few firms use river water, it is to be hoped that it will gradually become fit for others, the rate of its adoption being an index to its purification. Sewage precipitants are nearly always added in excess, and the two commonest, alumina and lime, interfere very materially with the delicate processes of dyeing and calico printing, and even the ammonia from sewage decomposition prevents a clean steam being generated for fixing in the steam chest. And since the present condition of the river is the commonest excuse—whether valid or otherwise—of manufacturers polluting, it may be well to bear this in mind. An earlier benefit may accrue from this in the case of firms such as the Birkacre Print Company, which at present purify the river water for actual use, but take no heed of the waste. If untreated sewage is kept out there will be times when suitable water can be abstracted and the purification process applied to the waste. As all the county boroughs in the watershed, in spite of the large populations, use no precipitants but rely on filtration, we are aided considerably here. The three authorities using precipitants (lime only in each case) are the Urban Sanitary Authorities of Horwich, Aspull, and Ince. The nine authorities possessing farms in operation are the county borough of Wigan, the municipal borough of Chorley, and the Urban Sanitary Authorities of Orrell, Billinge, Ormskirk, Adlington, Standish, Skelmersdale, and Pemberton. The seven authorities at present taking no action are the Urban Sanitary Authorities of Croston, Lathom, Upholland, and Blackrod, and certain districts of the Chorley and Ormskirk Rural Sanitary Authorities. Each of these cases presents features peculiar to itself, though all are referred to in the earlier part of this report. Should a special committee be appointed to-day to consider the returns, cases may be dealt with individually in the report from instructions of that committee. Manufacturing refuse of every possible description is conducted to the Douglas openly, without let or any thought to pollution, and surprise is exhibited (sometimes genuine) when such action is pointed out as dangerous to public health and a breach of the law. Visits have been paid to six calico print and dye works, six bleach works, one paper mill. Of this number four only resort to processes of waste purification—three grease recovery and one indigo precipitation—and even here the task is not one of river purification absolutely, for each stops at a point beyond which there is no profit in the further reclamation of the waste, though the river would be benefited by a continuance of the operation. Messrs. Cooke, paper makers, Horwich; the Pincroft Indigo Mill, Adlington; Birkacre Print Company, have cinder or refuse tips on the river bank. The Standish Company, Worthington, pitch refuse in the river bed, and the Hayton Bleachworks run in semi-solids, which is perhaps the cheapest and least conspicuous method of the three. Several samples of water delivered into the river from colliery pumps have been examined, but harmless iron oxide only has been found. A quantity of garden refuse is being tipped in the river near Walton Bridge by tenants of the

Walton Flats Nursery Gardens, which will soon become offensive. The firms previously mentioned as offenders in the case of cinders have been revisited. As far as can be seen the practice is now discontinued, new tips being at hand in most cases, but it is very unsatisfactory that the old tips are not removed, or such permanent works executed as will prevent slips otherwise inevitable. I am in communication with some firms where this project is entertained. The Colne Gas Company have still the cinders in the river, and on the opposite bank Messrs. Shaw, cotton manufacturers, have now a permanent sheet iron shoot for cinders overhanging half the river, with an island of refuse beneath it. Messrs. Peebles & Co., Rishton, have appropriated land for cinder tips, and are now burning soot previously reported upon, but lime from causticizers is still pitched in the river. I am led to believe that these matters only want following up closely to be remedied. I am, gentlemen, your obedient servant, W. Naylor."

Appended to the report was a list showing that the following authorities had taken no steps for the purification of sewage:—The borough of Clitheroe, the urban sanitary authorities of Padiham, Great Harwood, Rishton, Longridge, and Clayton-le-Moors, Ribchester (Preston Rural Sanitary Authority), and the urban sanitary authorities of Fulwood, Walton-le-Dale, Kirkham, Lytham, Croston, Lathom, and Upholland. Ineffective steps had been taken by the Blackrod and Leyland authorities.

The Chairman said upon that report it appeared very desirable that there should be a sub-committee appointed to go through the various reports of the inspector, and report to this Joint Committee with respect to them. That seemed to him the fairest and safest way to deal with the cases, and would prevent any hasty action with respect to the matter. He suggested that the vice-chairman of the Joint Committee and four other gentlemen be appointed, namely Mr. Whitely, Mr. T. Fair, Mr. Satterthwaite, Dr. Ferguson, and the Rev. R. C. Fletcher.

Mr. Peace seconded the motion, which was carried.

POLLUTION BY SOLID MATTER.

The Chairman thought the question of pollution by solids other than sewage was one which they could take in hand without waiting for any report from the sub-committee. (Hear, hear.) It was, in fact, one of the very first things which ought to be taken in hand, and they ought to be quite prepared to take some action after the report made that day. (Hear, hear.)—Mr. Lightbrown reminded the chairman that the committee had already taken action to the extent of warning the offenders to discontinue the pollution of the water by solids.—On the motion of Mr. Maynard, seconded by Mr. Lightbrown, notice was directed to be given, in the new cases reported by the inspector, requiring the discontinuance of such pollution, and the Chairman said this would apply both to sanitary authorities and private firms. The notice would refer to dry solids, and not to sewage solids.

CINDER TIPS.

Mr. Peace asked what power this committee had with respect to cinder tips extending over the bed of the river.—The Clerk (Mr. Hulton) said the committee would have power to enforce the removal of a cinder tip extending over the river if it were used for shooting cinders into the water. In any case he thought it desirable to request that such tips be removed.—A proposition to this effect was moved by Mr. Fair, seconded by Mr. Peace, and carried, and was directed to be added to the formal notice.

Copies of Sir Henry Roscoe's report to the Mersey and Irwell Committee, as to pollution by manufactories, were handed to the members, and the Chairman informed the members that that committee were inviting the manufacturers affected to confer with them as to the carrying out of the recommendations contained in that report. It was hoped to so arrange matters that the pollution might be stopped without having recourse to extreme measures.

The Rev. R. C. Fletcher hoped that the labours of this committee would result in the manufacturers being forbidden to pollute the river in any shape or form. Of the river Douglas he remarked that sometimes it was white and sometimes black, but it was never clear.

THE DANGERS OF PETROLEUM CARGOES.

At a recent meeting of the Institution of Naval Architects, Mr. J. H. Heck read a paper on some experiments with inflammable and explosive atmospheres of petroleum vapour. In the course of his paper the lecturer said:—Models to a scale from ⅛th of an inch to 1 inch to a foot were made of the tanks of a petroleum steamer; tubes and tanks varying in size and up to 6 feet and 12 feet high were also used during the course of the experiments. The petroleum used consisted of samples of crude and refined oil which had actually been carried in bulk; a quantity of petroleum spirit had also been experimented with. With the samples of refined oil supplied (both Russian and American) up to 70 deg. F., even with no ventilation, no inflammable or explosive atmosphere could be formed. At temperatures much above 80 deg. F., however, with no ventilation, such an atmosphere could be formed with a number of the samples. With nearly all the samples of crude petroleum, and especially the spirit distilled from crude petroleum, an inflammable or explosive atmosphere of petroleum vapour could be speedily formed with temperature from the freezing point and upwards; atmospheres of oxygen especially could be made highly explosive in the course of a few minutes. The atmosphere inside the tanks was made inflammable or explosive at temperatures up to 65 deg. F. by natural means, certain measures of crude oil being put into the tanks, the air which they contained was made inflammable or explosive by the vapour which was given off by the oil. At temperatures in excess of this, the excess of temperature was produced by a water bath. The condition of the atmosphere in the tanks was first tested as to its inflammability or explosiveness by the direct application of a flame or electric spark. In order to ignite an inflammable or explosive atmosphere of petroleum vapour a very high temperature is necessary. A red-hot piece of metal or coal, or a spark from steel or flint will not ignite such an atmosphere. A white-hot piece of metal, a flame, or an electric spark will readily do so, and this latter fact should be known by every one employed on petroleum steamers, as there seems a very general opinion that with the electric light there is no danger. As many safety fuses and switches often give a spark, no such electric light fitting should be placed in the 'tween decks, pump-room, or any other spaces where petroleum vapour may be present; very good reasons can also be given against the use in such places of portable electric lights which require a flexible cable with a lead and return wire. While a red-hot rivet will not ignite an inflammable or explosive atmosphere of petroleum vapour, a white-hot rivet will do so. Again, when a rivet which is only red-hot is placed in the rivet hole, a small flame is often produced even when the plates are wiped as clean as practicable. This small flame is no doubt due to the presence of small quantities of oil or the solid constituents of the oil. Again, a flame can also be produced by dropping a red-hot rivet on a piece of paper or chip. It therefore appears that during repairs, whenever a vessel is fit for red-hot riveting, it is also safe to use naked lights. One important note about petroleum vapour is its high specific gravity, it being roughly from 3 to 3½ times heavier than ordinary air. In testing the condition of the atmosphere inside a petroleum tank, if the air at the bottom is found not inflammable or explosive, the air above is sure not to be so. In the experiments, especially with the deep tanks, the air at the top was often found on testing with a syringe and naked light to be practically free of vapour, while on applying a light at the bottom an explosion was caused. A small quantity of some kind of crude petroleum will render a large space explosive. Of three of the samples tested, one volume of the oil would render respectively, giving round numbers, 180, 400, and 600 volumes explosive. A tank full of even crude petroleum appears to be quite as harmless as one containing coal, especially so if the air is excluded. The surface of the crude oil in a comparatively large tank was often purposely ignited by means of a fierce flame. The fire, however, could at once be put out by simply putting on the cover or cap, and thus preventing the admission of air. It is the vapour given off from the oil which renders the use of naked lights, or any artificial light, dangerous. When a tank is nearly empty the oil remaining, if it contains any spirit, may speedily render the atmosphere inside inflammable or explosive. When the atmosphere is in that condition it would be a good rule not to enter the tank with any other light except sunlight, and there is very little doubt that many of the members of this institution could design a petroleum steamer so that the tanks, when required, could be cleaned without the aid of any artificial light. When once the oil has been wiped out, the tank can be quickly cleared, and kept clear of any explosive atmosphere by very simple and inexpensive means. There are good grounds for assuming in vessels engaged exclusively in the carriage of refined petroleum in bulk, at ordinary temperatures, that daily tests would show that generally they are comparatively free of vapour, and that the only time the atmosphere they contain is inflammable or explosive is when the tanks are being steamed. The extra temperature which is produced by steaming causes petroleum vapour to be formed, even from refined petroleum, and anything which does that appears to be something which should be avoided. Many experiments were made with the model tanks—which were of tin or zinc—in order to ascertain what effect wind sails and hatchway area had in purifying or preventing the formation of an inflammable or explosive atmosphere of petroleum vapour. After repeated trials, the conclusion was arrived at that results obtained with small models were not trustworthy indications of what would take place in a large tank, for one reason, the conditions not being equal. For instance, in two tanks, one having twice the dimensions of the other, while the internal surface of the larger tank would be four times, the cubic contents would be eight times that of the smaller tank, if both tanks were consequently full of vapour and the hatchway areas were made proportional to the surface exposed, in the larger tank twice as much vapour would have to escape per unit of hatchway area in order to free both tanks in the same time. The

general deduction drawn from the experiments was that, unless oil was entirely removed from the tank, certain conditions might arise which would tend to make the atmosphere at the bottom inflammable or charged with petroleum vapour. As the production of vapour, other things being equal, is proportional to the surface of the oil exposed, a small quantity spread over a large surface, such as could take place by a small leakage of crude oil in the 'tween decks, would tend quickly to make the atmosphere inflammable; and, although the number and area of ventilators fitted usually in the 'tween decks, under such circumstances, if properly trimmed, might, on testing, be found sufficient to prevent the formation of such an atmosphere, when the vessel is steaming against a head wind, in a calm it is doubtful if they would do so. While, no doubt owing to the great density of petroleum vapour, it appears to be a question of time to get rid of it by diffusion or upward displacement, the tanks used in the experiments could be quickly cleared of it by the method of downward displacement—a method used in the manufacturing arts to get rid of large quantities of carbonic acid, which has, roughly, only a density of about half that of petroleum vapour. While not in any way attempting, from experiments on such a small scale, to draw any deduction in regard to what would be found on making tests with the large tanks of a steamer carrying petroleum in bulk, the experiments appear to show that, while any vapour that may be present cannot be got rid of in a few minutes—as some have asserted—by simply giving a little hatchway opening or a windsail at the top, they also show, on the other hand, that petroleum steamers, especially those carrying refined petroleum at ordinary temperatures, are quite as safe as many vessel carrying some kinds of coal; and that, if all the officers and engineers on these steamers had a more general knowledge of some of the elementary properties of petroleum and petroleum vapour, daily tests were made of the condition of the contained atmosphere, and ventilating fans or air-pumps were fitted, so that if any vapour was found it could be readily pumped out, petroleum steamers and their cargoes would be amongst the safest afloat.

AMERICAN OIL OF TURPENTINE.

By J. H. Long.

(Continued from page 262.)

ADULTERATION OF TURPENTINE (*Continued*).

2. *Boiling Point.*—In the examination of a large number of pure commercial samples of turpentine, it was observed that the boiling point was uniformly at 155 to 156 degrees, and that 85 per cent. of the sample distilled between 155 and 163 degrees. The distillation is practically complete below 185 degrees. From this it appears that a determination of the boiling point coupled with a fractional distillation may be of the highest value in detecting adulteration with petroleum products.

The initial and final boiling points of the eight mineral oils referred to above were as follows:—

		Initial.	Final.
Gasoline,	88 degs.	About 40 degs.	About 110 degs.
,,	74 ,,	,, 55 ,,	,, 125 ,,
Benzine,	63 ,,	,, 95 ,,	,, 165 ,,
"Standard White,"	110 ,,	,, 130 ,,	Above 360 ,,
"Water White,"	150 ,,	,, 140 ,,	About 310 ,,
"Head Light,"	175 ,,	,, 160 ,,	,, 315 ,,
Mineral Seal,		,, 230 ,,	Above 360 ,,
Paraffine Oil,		,, 300 ,,	,, 360 ,,

By the initial temperature here is meant not the point at which the first few drops passed over, but the temperature reached when about 1 cc. of 100 taken had passed over. The presence of 5 per cent. of mineral oils with turpentine would readily be shown by the tests, as was found by experiment.

3. *Flashing Point.*—Much importance is attached to the flashing point test. According to Redwood the flashing point of average American turpentine is 33 degrees C., which is much lowered by the presence of small amounts of volatile petroleum products. In the apparatus which I employ for such tests, a form similar to that suggested by Stoddard (*Am. Chem. Jour.* 4, 287), I find 32 degrees C. as the usual flashing point. Experiments were made on mixtures containing 95 volumes of turpentine with 5 volumes of several oils, with the following results:—

With Gasoline,	88 degs.,	flashing point below	15 degs. C.
,, ,,	74 ,,	,, ,, ,,	19 ,,
,, Benzine,	63 ,,	,, ,, about	22 ,,
,, "Standard White,"	110 ,,	,, ,, ,,	32 ,,
,, "Water White,"	150 ,,	,, ,, ,,	33 ,,
,, "Head Light,"	175 ,,	,, ,, ,,	34 ,,
,, Mineral Seal,		,, ,, ,,	35 ,,
,, Paraffine Oil,		,, ,, ,,	36·5 ,,

These figures show that very small amounts of the lighter petroleum products have a marked effect, while 5 per cent. of the common burning oils would escape detection by this test.

4. *Vapour Density.*—The vapour density of turpentine being much higher than that of the light petroleum products sometimes used for adulteration, I thought it desirable to test the value of this determination as an indication of purity. The Victor and Carl Meyer method by measurement of displaced air (*Berichte*, 1878, p. 2253) is very convenient for this purpose, and in my experiments was employed with ethyl benzoate as heating liquid. In the first tests a sample of fresh turpentine was distilled fractionally, and the portion distilling at 155·5 to 156·5 degrees was taken for experiment. Two trials gave a vapour density of 4·68 and 4·66, corresponding to molecular weights of 135·11 and 134·53. Another sample treated in the same way gave 135, as the molecular weight. Ordinary commercial turpentine not fractionated gives usually somewhat higher values as shown by the following table. About 150 mgms. were taken for each trial:—

No.	Vapour Density.	Molecular Weight.
1	5·05	145·8
2	4·73	136·6
3	4·89	141·2
4	4·86	140·4
5	4·88	140·9
6	5·11	147·7
7	4·92	142·1
8	4·87	140·8
9	4·98	143·8
10	4·88	140·9
11	4·80	138·6
12	5·08	146·7
13	5·05	145·8
14	4·89	141·2
15	4·80	138·6

It will be remembered that in the fractional distillation of 100 cc. of these turpentines, about 85 cc. is obtained between 155 and 163 degrees C., while in some cases the distillation is not completed below 180 to 185 degrees. In No. 13 the temperature of distillation reached 190 degrees. Both tests indicate the presence of compounds heavier than the pure terpene $C_{10}H_{16}$.

The light petroleum products known as 88 degree gasoline, 74 degree gasoline, and 63 degree benzine, consist essentially of hydrocarbons having a molecular weight below that of turpentine. The 63 degree benzine contains chiefly C_8H_{18} and C_9H_{20} (according to Schaedler and Allen). A commercial sample tested in the laboratory began to boil at about 80 degrees, and was completely volatile under 150 degrees. Most of it distilled between 105° and 130°. A determination of the vapour density gave 4·09, corresponding to a molecular weight of 118·1. A second sample, distilling at a somewhat lower temperature, gave 3·81 as the vapour density, with 109·9 as the corresponding molecular weight. An experiment was made by mixing equal volumes of turpentine, No. 8 of the above table, and the benzine sample having a density of 4·09. A small amount was weighed out for the test, the result of which gave 4·42 as the vapour density, with 127·5 as the corresponding molecular weight. This is a little lower than one would expect. A small addition of benzine can be shown by proceeding as in the following experiments:—

A sample of turpentine was fractionated, and the portion boiling at 156 degrees saved. This gave a density of 4·67. A mixture containing 97 cc. of this turpentine and 3 cc. of the benzine of the last experiment was made and distilled fractionally, the first 10 cc. being saved. This was used for a vapour density determination, which gave as the result 4·56, corresponding to 131·6 molecular weight. In another trial 90 cc. of the same turpentine, and 10 cc. of the benzine were mixed and distilled, 10 cc. being saved. 4·34 was found here as the vapour density corresponding to a mean molecular weight of 125·3.

By taking the first portion of the distillate, it is possible in such cases to show readily an admixture of light petroleum products, but the method naturally fails with heavier products. A certain brand of commercial turpentine known among dealers as "patent" oil, and which contains a kerosene of moderately high test, was tried in the same manner. The vapour density of the whole product was found to be 5·49, corresponding to a molecular weight of 158·5, while the first portion of a distillate gave a density scarcely differing from that of turpentine. A low vapour density would be found in a distillate containing rosin spirit.

5. *Distillation with Steam.*—I have made a number of tests in this manner, as recommended by Armstrong, and obtained results which fully confirm his. The method is valuable for the detection of vegetable oils or heavier petroleum products.

6. *Nitric Acid Oxidation.*—Wm. Burton (*Am. Chem. Jour.* 12, 102, and *Chemical Trade Journal*, p. 267, No. 205). has shown that a fair quantitative measure of the petroleum products present in a turpentine may be made by treating the sample with fuming nitric acid in the cold. By slowly dropping 100 cc. of

the turpentine into about 300 cc. of the fuming acid in a flask immersed in cold water, the turpentine is gradually oxidized to acid compounds soluble in hot water, while the petroleum is left practically unattacked. At the end of the reaction, it is simply necessary to wash the product several times with hot water, to dissolve the oxidation compounds, separate with the funnel, and measure the paraffine residue. This is probably the best quantitative method yet proposed, and in my hands has given fairly good results.

7. *Other Tests.*—Numerous other tests have been given for the detection of adulteration in turpentine. Some of them are valuable, but many are useless and often misleading. As an illustration, I will describe one which is published in the widely circulated *Paint, Oil and Drug Review* of Dec. 17, 1890, as "An Absolute Test for Turpentine," and which has been made known to dealers and producers by means of a printed circular.

The test is carried out by adding a few crystals of potassium iodide to the turpentine and waiting a short time. If the crystals remain white, the oil is to be considered pure, but if they turn brown, that is, if iodine is liberated, this is supposed to indicate adulteration by petroleum products, but by what reaction is not explained. Several experiments I tried gave very different results. The following is probably an explanation of what takes place, and will show the fallacy of the test. With perfectly pure potassium iodide, fresh turpentine which has not been exposed to the air gives practically no colouration, while with the older samples I observed a marked colour, which is undoubtedly due to the action of hydrogen peroxide formed in the turpentine by contact with air. This can be readily shown by experiment. If a fresh turpentine which does not react with the iodide is exposed freely to the air for some days, or even shaken in a partly filled bottle a short time, a reaction will appear in a few seconds after adding the crystals. Kingzett (*Jour. Soc. Chem. Ind.* 1886, p. 7) has called attention to the large amount of hydrogen peroxide formed by the oxidation of Russian turpentine. The yield from American turpentine is less, but still important.

Iodide of potassium containing iodate would give a reaction with samples of turpentine containing petroleum products from which the sulphuric acid of the refining operation had not been thoroughly removed. Experiments made with pure iodide, fresh turpentine and acid free petroleum gave no reaction whatever. The test is therefore without value.

Legal Intelligence.

GLAMORGANSHIRE ASSIZES.

(Before Mr. Justice Charles.)

BARRY DOCK PAINT AND COLOUR COMPANY, LIMITED, *v.* SWANSON.

In this action, Mr. Abel Thomas, M.P., and Mr. David Lewis appeared for the plaintiffs, and Mr. Arthur Lewis represented the defendant.—The action was brought to recover damages with respect to three separate consignments of paint ordered by defendant in March, April, and May last year. The amount plaintiffs sought to recover was £103 4s. 9d., and his Lordship, after reviewing the evidence, gave judgment for the plaintiffs for the amount claimed.

(Before Mr. Justice Vaughan Williams.)

LEWIS AND SONS *v.* WALKERS, PARKER, AND COMPANY.

Plaintiffs are vitriol makers at Swansea, and defendants are the old firm of lead merchants and smelters of Chester, Newcastle, Bagillt, and London.—Mr. Abel Thomas, M.P., and Mr. Meagher were for plaintiffs, and Mr. Marshall and Mr. Arthur Lewis were for the defendants.—According to counsel's statement, plaintiffs sued for about £400 damages, the ground of claim being that defendants supplied them, under contract, with an inferior quality of lead tanks for the purpose of rectifying vitriol. It was asserted that, if the tanks had been of the proper quality, the average life was 12 or 15 months without patching, and with patching about three years. In this case, it was alleged, that not one of the pans lasted more than a month without repairing.—The contention for the defence was that the pans were overheated and improperly used.—After several witnesses had given evidence, the Judge said he considered the onus lay with the plaintiffs. He expressed the opinion that Mr. Marshall should not call more evidence, and that it was for the plaintiffs to take their own course.—Mr. Meagher having replied, his Lordship said counsel had not convinced him. According to the evidence he had heard, the lead supplied was as pure as any that could be produced. If the parties had only had the good sense to have gone together at first, and had a couple of samples analysed, at a cost of about two guineas, they could have settled the case without going to court and the subsequent expense.—He gave judgment for the defendants, with costs.

DISCOVERY OF A NEW ELEMENT.

ONCE more the periodic law has been shown capable of pr in advance for such novel forms of matter as the good lu skill of some chemist may lead him to discover. If the table gi arrangement of the elements in the manner consonant with th recent researches be examined, it will be seen that in the secon the twelfth member is still missing. Possible elements fa positions adjacent to this gap might be expected to have an weight of 220-230 and in regard to their properties to naturally to the series embracing glucinum, calcium, strontiu barium. A gap occurs after barium, but the hitherto vacan after this gap is probably to be filled. There has been already c by two chemists, Mr. H. Droop Richmond and Dr. Off, whom at least is well known in this country, a considerable an evidence pointing to the existence of the body which has be visionally named Masrium, on account of its discovery in a found in Egypt, the temporary home of both investigators. S as to the presence of some unclassified substance was aroused the examination of a mineral which was at first believed t manganese alum, and to which was assigned the formula Al_2O (SO_4) $22OH_2$.

The substance as found, contained in addition to the bodies for the pure mineral, ferric and ferrous oxides, cobalt oxide oxide of an unknown substance which was present to the e about 0·2%. This unknown substance was found to give precipitate with sulphuretted hydrogen in an acetic acid soluti yet to be differentiated from zinc by the fact that its hydrate soluble in ammonia. On account of the very small quantity of available, an accurate determination of the atomic weight practicable, but the smallest approximate value was found to corresponding to 228 if the metal be divalent. The precis required by the periodic law is 225. With regard to the reac the metal with the ordinary group reagents, hydrochloric acid precipitate, sulphuretted hydrogen also gives no precipitate in a acid with hydrochloric acid, ammonia gives a white ge precipitate insoluble in excess of the reagent, and similar pre are yielded by ammonium sulphide, ammonium carbonate and phosphate. Its behaviour with platinic chloride has not y ascertained. Its reactions with other common precipitants is as It gives a white precipitate with potassium ferrocyanide whic soluble in excess of the reagent, and (like zinc ferrocyanide) i hydrochloric acid, but is soluble in excess of the chloride of th Potassium ferricyanide gives no precipitate. The oxalate is wh soluble in excess of the chloride and in acetic acid. A basic ac be precipitated by boiling a neutral solution of the acetate, alumina, but it has the property of redissolving on cooling. P chromate gives a yellow precipitate (in a manner analogous which is soluble in excess of the chloride of the metal. potassium tartrate gives a precipitate soluble in excess of the and from this solution the hydrate cannot be precipitated by ammonia. Caustic potash and soda give precipitates which ar in excess of the alkali. Masrium sulphate $MsSO_4$ $8H_2O$ is crystalline substance which can be obtained from its aqueous but crystallises far better from 50% alcohol, the nitrate can crystallised from the same solvent; it contains water of cryst but the amount has not yet been determined. Attempts to pr metal itself by reduction of the chloride with sodium and by th lysis of a solution of the cyanide, proved unsuccessful. Altho impossible not to agree with the feeling very generally express meeting of the Chemical Society, at which Messrs. Richmond paper was read, namely—that the proper attitude at present suspended judgment, yet we cannot but hope that the en investigators have made a real and enduring contribution to ou and may be soon in a position to place their observations on irrefrangible evidence.

A WARNING TO CATALOGUE MAKERS.—On the 3rd Ma Low gave judgment in the case of Harpers, Limited, *v* Bar & Co., Limited. This was an action to restrain the defend issuing a catalogue of power transmission appliances, which w to be an infringement of the copyright of a catalogue of the The judge found that the plaintiffs had a copyright in all the parts of their catalogue, and that these parts had been copi respondents, either literally or with colourable alterations. down that the principle underlying such cases was that a p entitled to reap the benefit of his own skill and labour, a publication that is not merely a collection from sources open the product of mental labour, entitles the author to a copy other persons thought the scheme of a certain catalogue a they might compile a catalogue on the same system, but the it for themselves, and were not entitled simply to copy a w was the product of the knowledge and labour of others.

OFFICIAL MEMORANDA.

(From the Board of Trade Journal.)

NEW SPANISH CUSTOMS TARIFF.

The following Statement shows the Rates of Import Duty to be levied on the following selection of articles in Spain under the New Spanish Tariff, compared with the Rates of Duty hitherto leviable on Imports into that Country.

Up to the 30th June next, when the Anglo-Spanish Convention of 1886 expires, the Conventional rates of the Spanish Tariff will still be levied on British Produce, including those of the Franco-Spanish and German-Spanish Treaties, which are enumerated in Parliamentary Paper Commercial No. 15 (1886) (C-4778).

No.	Classification of Articles.	Rates leviable by New Tariff of 1st February, 1892. General Tariff.	Special Tariff.	Classification of Articles.	Rates leviable hitherto on Imports from United Kingdom.
	CLASS I.	Per 100 kilogs. Pes. cts.	Per 100 kilogs. Pes. cts.		Per 100 kilogs. Pes. cts.
	Stones, Earthy Matters, Minerals, Glass, Earthenware, and Productions of Pottery.				
	Group 1.—Stones and Earthen Productions employed in Building, Arts, and Manufacture.				
1	Marble, jasper, and alabaster, in the rough, or in dressed pieces, squared and prepared for taking the form	2 00	1 75		0 37
5	Other stones and earthenware substances employed in building, arts, and manufactures; cement, lime, and gypsum	0 40	0 30		0 06
	Group 3.—Bituminous Shale, Bitumen, and Bituminous Products.	Per 100 kilogs.	Per 100 kilogs.		Per 100 kilogs.
7	Pitch, tar, creosote, unrefined, mineral oils, and asphalts, bitumen, and shale	0 60	0 40		0 41
8	Naphtha, vaseline, crude petroleum, natural petroleum oil, and other crude oils of shale	25 00	25 00		21 00
9	Benzine, gasoline, petroleum, and other refined oils	40 00	40 00		32 00
	Group 4.—Minerals.	Per 1,000 kilogs.	Per 1,000 kilogs.		Per 1,000 kilogs.
10	Mineral ores	0 30	0 25		0 25
	CLASS III.				
	Substances employed in Pharmacy, Perfumery, and Chemical Industries.	Per 100 kilogs. Pes. cts.	Per 100 kilogs. Pes. cts.		Per 100 kilogs. Pes. cts.
	Group 1.—Simple Drugs.				
88	Cocoa-nut and palm oil, and other heavy oils	9 60	8 00		1 00
89	Other vegetable oils, excepting olive oil	27 60	23 00		23 00
90	Dye woods and tannery bark	0 30	0 25		0 10
91	Seeds of rape, of flax, and other oleaginous seeds, including copra or cocoa-nut	1 20	1 00	Madder root	18 35
92	Colophony, pitch, and other resinous products of a similar kind	5 40	4 50		0 20
93	Garancine, or madder, and other vegetable products, not specified under other headings	12 00	10 00	Other vegetable products not elsewhere specified	— 10 00
	Group 2.—Colours, Dyes, and Varnishes.				
95	Ochres and natural earths, for painting, including alumina	0 12	0 10		0 10
96	Indigo and cochineal	54 00	45 00		10 00
97	Dyeing extracts	9 40	7 80		3 00
98	Varnishes	28 80	24 00		18 00
99	Colours, in powder or in lump	9 00	7 50		4 80
100	Ditto, prepared, and inks	30 70	25 60		24 00
101	Ditto, derived from coal, and other artificial colours, and garancine and its mixtures with madder	Per kilog. 3 00	Per kilog. 2 50	Garancine	Per kilog. 0 75 0 65
	Group 3.—Chemical and Pharmaceutical Products.				
102	Muriatic or hydrochloric, nitric, and sulphuric acids	Per 100 kilogs. 2 60	Per 100 kilogs. 2 20	Muriatic and hydrochloric acids	Per 100 kilogs. 1 00
103	Natural mineral waters	Per hectol. 6 00	Per hectol. 5 00	Not separately mentioned.	—
104	Alkaloids and their salts	Per kilog. 36 00	Per kilog. 30 00		Per kilog. 27 50
105	Alum	Per 100 kilogs. 1 80	Per 100 kilogs. 1 50		Per 100 kilogs 1 15
106	Sulphur	1 50	1 25		0 25
107	Alkaline carbonates, barillas, caustic alkalis, and ammoniacal salts, excepting sulphate	4 55	3 80	Barilla, natural and artificial; Alkaline carbonates, caustic alkalis, &c.	0 80 1 00
108	Chloride of lime	3 10	2 60		1 30
109	Chloride of potassium, sulphate of soda, chloride and carbonate and sulphate of magnesia	0 60	0 50		0 50
110	Chloride of sodium (common salt)	3 90	3 25		0 54
111	Glues and albumina	14 40	12 00		12 00
112	Phosphorus	Per kilog. 0 85	Per kilog. 0 70		Per kilog. 0 35
113	Nitrate of potash (saltpetre)	Per 100 kilogs. 4 50	Per 100 kilogs. 3 75		Per 100 kilogs. 1 50
114	Nitrate of soda, and *sulphate of ammonia*	1 20	1 00		0 25
115	Oxides of lead	6 00	5 00		2 00
116	Sulphate of copper	1 20	1 00	Not separately mentioned.	—
117	Sulphate and pyrolignite of iron	1 80	1 50		1 50
120	Chemical products not specified	Per kilog. 0 12	Per kilog. 0 10		Per kilog. 0 10
	Group 4.—Various.				
121	Starch	Per 100 kilogs. 18 00	Per 100 kilogs. 15 00		Per 100 kilogs. 9 15
122	Feculas, for industrial uses, and dextrine	2 40	2 00		1 00
123	Common soap	22 50	18 75		15 80
124	Mineral and vegetable wax in lumps	30 00	25 00	Not separately mentioned.	—
125	Paraffine, stearine, animal wax, and spermaceti in lumps	24 00	20 00		16 50
126	The same, and all manufactured waxes	60 00	50 00		33 90

Reports of Companies.

THE BROXBURN OIL COMPANY, LIMITED.

The directors of the Broxburn Oil Co., Ltd., intimate that the gross profits for the year ended 30th March were £46,463. They recommend a dividend on the ordinary shares at the rate of 10 per cent., with a balance forward of £3,379. For each of the previous three years the dividend was 15 per cent.

RIO TINTO COMPANY, LIMITED.

The nineteenth general meeting of the shareholders of the Rio Tinto Company, Limited, was held in London on Friday last, Mr. H. M. Matheson presiding. In moving the adoption of the report, the Chairman said he had to point to the steady progress made by the Company in its sales of pyrites and its production of manufactured copper, the increase in pyrites delivered to consumers being 34,657 tons, and in copper produced at the mines 2,044 tons above the previous year. Owing to the true mining policy uniformly pursued by the Company in preparing the mines well in advance by exploration and development, not only had economy been secured but large quantities of mineral had been rendered available, there being now not less than 11,000,000 tons in that position out of the large mass in the mines, so that the output could at any time be largely increased without undue pressure or expense. During the first half of the year prices of copper were fairly satisfactory, the relation of consumption to supply then giving promise of better results so soon as the depression which had so long prevailed in commercial affairs should begin to pass away. The threatening, however, of increased shipments from America, whether well or ill-founded, and the turn taken by the speculative element led to a decline in prices, from which there had been only partial recovery. Under these circumstances he was sure the Board would have the hearty support of the shareholders in their resolve to strengthen the company by devoting a substantial portion of the profits to writing down permanent outlays and limiting the dividend to 10 per cent. for the year. Besides the £72,240. sinking funds, on bonds they had written off £162,472., and they carried forward £66,161. The stocks of copper carried over at the end of the year, whether refined or in process, aggregating 6,512 tons, had all been carried over at merely cost price. The extensive reserve heaps at the mines had been this year written down by no less a sum than £80,000. This copper, in the reserve heaps of which there were 90,000 tons was now represented in the Company's books by a charge of five guineas per ton, as compared with £6. 2s. 7d. at the close of the previous year. Proposals had been made on the part of the American producers of copper to the European companies with a view to restrict the production. Several meetings had been held with the representatives of the American companies, but up to this time no agreement had been reached. Mr. H. Doetsch seconded the resolution, which was adopted without discussion.—On the motion of the Chairman, seconded by Mr. J. M'Farlane, a resolution was carried declaring a final dividend of 8s. per share, making with the interim dividend paid in November last, 20s. per share, or 10 per cent. for the year 1891.

NOTICE.

LONDON AGENTS.

Booksellers and Newsagents may now obtain supplies of
THE CHEMICAL TRADE JOURNAL
From
MR. JOHN HEYWOOD,
2, Amen Corner,
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On usual trade terms.

Correspondence.

*** We do not hold ourselves responsible for the opinions expressed by our correspondents.*

ANSWERS TO CORRESPONDENTS.

G. H. S.—We are glad you found the information of service to you.

H. E. T. (Barbadoes).—We thank you for your letter. The matter now is all in order.

A. P.—We shall be pleased to receive your communication.

W. S. C.—We trust the matter now has been put right and that you will have no trouble in the future.

R. K. and Co. (Cologne). We have been making preparation for an extension, by which your request can be satisfied, but such changes must necessarily be somewhat delayed before they can be brought to maturity.

Trade Notes.

Gas Testing.—The Corporation of Dublin are about to erect a public lighting and gas meter testing station in Tara-street, in accordance with plans prepared by the city architect, as a cost of about £3,000.

Fire at a Soap Factory.—Last Friday, the Bellshill Chemical Works and Soap Factory, Coatbridge, belonging to Messrs. Barr, were destroyed by fire. A large number of persons are thrown out of employment.

Personal.—While Professor Edward Campbell, who has filled for several years the chair of Chemical Science at the University of Ann. Arbor., U.S.A., was making a quantitative analysis about a fortnight since, two bottles filled with gas exploded, and he sustained injuries of a very serious character on the head and face. His eyes were so badly injured that it has been found necessary to have one removed, and the sight of the other is despaired of.

River Pollution in Cheshire.—With reference to the decision of the Mersey and Irwell Joint Committee to take action against the Macclesfield Corporation in order to prevent the pollution of the River Bollin, a special meeting of the Sanitary Committee of the Macclesfield Board of Health was recently held for the purpose of considering the matter. The meeting decided on the purchase of land in the neighbourhood of Prestbury for the purposes of a sewage farm. A sub-committee will wait on the Irwell and Mersey Joint Committee for the purpose of explaining their contemplated action.

The Price of Manchester Gas.—The Gas Committee of the Manchester Corporation have decided to reduce the price of gas 3d. per thousand cubic feet, making the price 2s. 3d. within the city and 2s. 9d. to consumers outside the city boundaries. The question of charging a lower price for gas used for cooking and heating purposes was also under the Committee's consideration, but it was decided that as such a reduction would benefit only a certain number of the consumers it would be better to make a reduction that would be applicable all round.

Society of Chemical Industry Meetings: *London Section.*—The next meeting of this section will be held on Monday, May 2nd, when a paper will be read by Pro. Wm. Ramsay and Mr. J. C. Chorley, on "The distillation of wood," and also a paper by Dr. S. Rideal, entitled "Notes on the composition of some Indian gums of known origin." *Liverpool Section.*—The last meeting of this section for the present session will be held in the Theatre of the Chemical Laboratories, University College, Brownlow-street, on Wednesday, May 4th, when the following papers will be read: I.—"Croton Tiglium in Cattle Foods," by Dr. J. W. Leather. II.—"The Systematic Analysis of Town Air with Special References to the Establishment of Testing Stations in Liverpool and District," by T. Lewis Bailey, Ph.D., and Charles A. Kolm, Ph.D., B.Sc.

Market Reports.

REPORT ON MANURE MATERIAL.

During the week there has been a good business doing for prompt and early delivery, but prices do not vary materially from those given in our last report.

For Florida 75/80% phosphate rock, 9d. per unit is now asked, but it is likely that if firm offer of 8½d. per unit were made for cargoes, it would still be business. Peace River rock, 60% hot-air-dried, can be bought at 7¼d. per unit, and hot-air-dried Bull River, 55/60%, at 7d. per unit, in cargoes, to U.K. ports.

There is nothing fresh to report in Continental phosphates, and so far we do not hear of any business in Canadian.

So far, buyers of River Plate cargoes of bones, do not come up to seller's idea of value, but it is understood that over £4. 2s. 6d. has been bid, *for shipment*. The quay having been cleared of East Indian bone meal at Liverpool, £4. 2s. 6d. up to £4. 7s. 6d., according to quality, now required, but sales have been made to other ports of *due* stuff, at a shade under £4. For *shipment*, £4. 2s. 6d. would be cabled out for fair average quality. We have nothing to report in crushed bones in the absence of arrivals.

The deliveries of nitrate of soda are still very heavy, but prices do not show any improvement. On spot 8s. 9d. per cwt. is being accepted for ordinary quality, and 8s. 10½d. to 9s. for good to refined. Due cargoes are worth about 8s. 6d. per cwt., and later arrivals may be had at about 8s. 3d.

There is nothing fresh to report in home prepared dried blood supplies being on a very limited scale. 50 tons River Plate, arrived at Liverpool, sold, but price not reported.

Superphosphates and kainit remain without alteration in values.

TAR AND AMMONIA PRODUCTS.

is no change to report in the position of benzol or anthracene, cles keep extremely flat and it is feared likely to do so for ie to come. Solvent naphtha, creosote, and crude carbolic are in price and scarcely sought after. Pitch being the only hich can be said to have any life in it.

ılphate of ammonia market is quite lifeless and the improve- the weather seems to have had no effect upon prices. The ts are still large but they seem to be in execution of old con- Business apparently can not be done only at low prices y since the Scotch sellers are willing to accept present prices, ptember and even to the end of the year. To-day's values are 6d. to £10. 3s. 9d. f.o r. Hull and Leith, £10. 1s. 3d. to 6d. f.o.b. Liverpool. Beckton is quoted at £10., while out- don makes have fallen to £10. 5s.

[ISCELLANEOUS CHEMICAL MARKET.

are no changes to call for special note in any of the staple pro- the alkali trade. Caustic soda is still quiet, but values are l, spot quotations being f.o.b. Tyne, 77%, £11. 10s; f.o.b. ol, 74%, £11. 10s.; 70%, £10. 10s.; 60%, £9 7s. 6d.; 60%, £9. 2s. 6d. Bleaching powder is in good all-round and there is no change in the quotations for prompt or for- iveries; the current quotation being £7. 10s. f.o.r at maker's nd £8. f.o.b. Liverpool and Tyne. Soda ash in all qualities it change at 1⅛d. per degree, f.o.b. for Leblanc, and 1$\frac{5}{16}$d. for t carb. ash, 58%. Soda crystals, £3. 5s. to £3. 10s, according ıge. Recovered sulphur, £5. to £5. 5s. per ton, f.o.r nd muriatic acid continue in good demand, without alteration

Chlorate of potash, 7d. per lb. Chlorate of soda, 8d. per lb. rm at convention prices, 29s. to 30s. per cwt. according to . Brown acetate of lime has been sold freely for prompt and delivery, at £5. 15s. to £6., at usual points of delivery. Grey of lime is dearer. Other acetates generally are slightly lower. :etate of lead and nitrate of lead extremely dull, but nominally change in price. Aniline oil and salt are nominally at 7d. and er lb. respectively. Carbolic acid crystals still depressed, at 4⅞d. per lb. Sulphate of copper, £15. 10s. per ton, f.o.b. caustic, and carbonate are without alteration in value, but is rather quiet. Prussiate of potash steady at 10½d. per lb. ates without change. Oxalic acid 3d. per lb, and there is ore enquiry. White powdered arsenic has been sold at slightly ates in the past week; current value being £10. 15s. to 5. 6d. for best brands, f.o.r. Garston.

THE METAL MARKETS.

)ON, WEDNESDAY.—Pig iron firmer; Scotch warrants closed ½d. Middlesbrough 38s. 8d. cash, and Hematite 48s. 8d. 'opper, quiet but firmer. Chili bars, G.O.B.'s and G.M.B.'s £45. 10s. cash, and £46. to £46. 7s. 6d. three months. Tin Straits closed at £94. 2s. 6d. to £94. 12s. 6d. cash, and 5. 6d. to £94. 7s. 6d. three months. Australian, £94. 2s. 6d. English ingots, £97. to £97. 10s. Lead dull: Spanish, 5. English, £10. 12s. 6d. to £10. 17s. 6d. Silesian spelter, £21. 17s. 6d. Quicksilver, £6. 15s., first hands, second 6. 14s. 6d. Copper shares improved: Cape, 1$\frac{5}{16}$ to 1$\frac{7}{16}$; 2¼ to 2⅜; Libiola, 2⅞ to 3⅛; Mason and Barry, 3⅞ to Tinto, 15¾ to 15⅞; Tharsis, 4⅝ to 4¾; Namaqua, 1⅛ to nulcillo $\frac{7}{10}$ to $\frac{9}{10}$.

VERHAMPTON, WEDNESDAY.—A rather more confident visted to-day, though care is still necessary in doing business recent failures. Demand is slightly better, works which last week for holidays being now restarted. The break-up of Iron Association is understood to be consequent on the ince that the Scotch tube makers were buying iron at £5. 15s. while English makers were paying £6. 5s. The Hoop Associa- exists. Pigs slow; prices easier. Northamptons and Derby- 5s. delivered to works; Lincolns. 48s. at stations.

GOW, WEDNESDAY.—Market flat, with fair business. one at 41s. 2½d. and 41s. 2d. cash; closing buyers at l. cash and 41s 3d. one month, sellers ask 41s. 3d. cash and one month. Middlesbrough done at 38s. 11½d., 39s., and cash; closing buyers at 38s. 8d. cash, sellers ask 38s. 10d. done at 49s. 1½d. cash, and 48s. 8½d. cash, also at l., and 49s. 2d. one month; closing buyers at 48s. 8d. cash nonth, sellers ask 1d. more.

LIVERPOOL OIL AND COLOUR MARKET.

LIVERPOOL, WEDNESDAY.

OILS.—Palm oil: There has been rather more business passing but at a reduced figure. Sales of Lagos having been made at £19. 15s. and Accra £18. 17s. 6d. both transit, the market, however, still remains quiet if not dull. Olive: The market is quietly steady, the demand is small, prices being unchanged from last week's quotation. Linseed continues to decline in price, it now being quoted 19s. to 20s. 6d. in export casks, the demand however, is moderate even now. There have been small sales of Rape, Stromer's Stettin having been done at 26s. and Belgium at 24s. per cwt. Cottonseed: The improve- ment in Liverpool refined has not been maintained, it having again changed in buyers' favour to 19s. 6d. per cwt, at which both it and American are steady. Castor oil is quiet but steady, good seconds Calcutta continues at 2⅝d. and first pressure French at 2$\frac{11}{16}$d. per lb. Tallow keeps steady in price. There is not much business doing, the demand being very moderate. Resin, common, remains at 4s. 3d. per cwt, and there is nothing to chronicle in the market save that it is quiet and has been all the week. Spirits of turpentine not so firm, the price having declined to 26s. 6d. at which it is now steady. American petroleum is unaltered at 5¼d. to 6½d. according to quality. Russian refined, however, is firm at 4½d. per gallon.

COLOURS without change. Ochres: Oxfordshire, common, £10. medium, £12., best, £15.; Derbyshire, common, 40s., medium, 50s., best, 60s. Welsh, best, 70s., seconds, 50s., and common, 18s.; Irish, Devonshire, 40s. to 45s.; French, J.C., 55s. to 60s.; M.C., 65s. to 67s. 6d. Umber: Turkish quiet. Devonshire, 50s. to 55s. White lead, red lead, and oxide of zinc unchanged. Venetian red, £6. 10s. to £10. Cobalt: Prepared oxide, 10s. 6d.; black, 9s. 9d.; blue, 6s. 6d. Zaffres: No. 1, 3s. 6d.; No. 2, 2s. 6d. Oxide of iron: common, £6.; medium, £10.; finest, £20.

THE LIVERPOOL MINERAL MARKET.

Owing to the holidays the market has been somewhat quiet. Manganese:—There have been more arrivals, but prices continue firm. Borate, 6¼d. per lb.; sulphate, £21. 10s.; oxalate, 1s. 6d. per lb.; chloride, £15.; carbonate, £12. 10s., steady. Magnesite: Raw lump flat. Raw ground £6. 10s., and calcined, £12. 10s. Bauxite (Irish Hill brand) steady; lump, 20s.; seconds, 16s. and thirds, 12s. French chalk: Arrivals this week have improved. A steady business has been done at full figures. "Angel White" brand, silvery, 90s. to 92s 6d.; prime quality, 90s. to 95s; and superfine, 105s. Barytes:—Carbonate scarce, especially best lump, at 90s. to 95s.; nuts, 70s. to 80s.; whilst finest white sulphate is steady. "Angel White," No. 1, 70s.; No. 2, 60s. to 65s.; No. 3, 45s. Pumicestone steady. Iron ore steady; Bilbao shipments unaltered; Irish and Cumberland easy. Santander and manganiferous, there is more doing. Emerystone steady, especially best qualities. No. 1 lump, £5. 10s. to £6.; smalls, £5. to £5. 10s. Fullers' earth quiet; best lump, 55s.; fine impalpable ground, £7.; "Emerald" ground, 80s. Scheelite, wolfram, tungstate of soda, and tungsten metal firm and unchanged. Chrome ore: More doing, especially for the higher qualities. Stocks practically nil. Antimony ore and metal, rather flat. Asbestos very firm. Potters' lead ore, smalls, £10. 10s. to £11. 10s. Calamine easy. Strontia sulphate (celestine) quiet. Limespar unchanged, especially for English manu- factured; old G.G.B. brand in demand at 50s. (ground). Felspar quiet. Fluorspar: Best quality scarce. Ferro-manganese steady, 75%, £12.; 85%, £13. 15s. Plumbago brisk. Spanish, £5.; best Ceylon lump at last quotations; Italian and Bohemian, £4. to £12. per ton. "Founders," £5. to £6.; Blackwell's "Mineraline," £10. French sand, 20s. to 22s. 6d. Ground mica, £45 to £50. China clay steady; common, 18s. 6d.; good medium, 22s. 6d. to 25s.; best, 30s. to 35s. (at Runcorn). Bog ore (oxide of iron) steady; finest quality, 22s. to 23s.

TYNE CHEMICAL REPORT.

TUESDAY.

Chemicals: There is little change to report, demand continues quiet for most products with the exception of bleach, which is in strong request at £7. 10s. and £7. 15s. per ton f.o.b. nett cash.

Soda crystals: The price is now quoted at £3. per ton gross weight f.o.b. Tyne nett cash. One of the works of the United Alkali Co., which had been affected by the strike, having partly restarted operations. Bleaching powder, softs, £7. 10s. per ton, hards, £7. 15s. per ton; caustic soda, 76/77%, £12. per ton, 70%, £10. 10s. per ton; recovered sulphur, 2 cwt. bags, £5. 5s. per ton; soda ash, 48%, £5. 8s. 9d. per ton, 52%, £5. 17s. 9d. per ton, 56%, £6. 6s. 9d. per ton; alkali, 36%, £4. 18s. 6d. per ton; white alkali, 48%, £6. 10s. per ton, 50%,

£6. 15s. 6d. per ton, 52%, £7. per ton; hyposulphite of soda, £7. per ton in 5-7 cwt. casks, £7. 15s. per ton in 1 cwt. kegs, both in 10 ton lots; silicate of soda, 75° Tw. £3. per ton, 100° Tw. £4. per ton, 140° Tw. £4. 7s. 6d. per ton; soda crystals, in casks, £3. per ton gross weight, in 2 cwt. bags, £3. per ton nett weight; chlorate of potash, 7d. per lb less 6%; pearl hardening, £3. 10s. per ton nett; pure white sulphate of alumina, £4. 10s. per ton; blanc fixe, £7. 10s. per ton; chloride of barium, £7. 10s. per ton; nitrate of baryta crystals, £19. per ton; nitrate of baryta, ground, £19. 10s. per ton; sulphide of barium, £7. per ton; carbonate of alumina, £28. 10s. per ton; aluminate of soda, £33. 10s. per ton; hydrate of barium, £11. per ton.

South Durham salt, scarce at 10s. to 10s. 6d. per ton. nett f.o.b Tees.

Northumberland coal: Steam coal firm, 11s. 6d. per ton f.o.b. is current quotation. Gas coal, steady; manufacturing coal, in good demand.

Durham miners strike: A meeting of the Durham coal owners and the Federation Board was held yesterday to talk over the situation. As a result of the conference, it was stated upon good authority, that the owners intimated that they could not now, owing to further decline in trade, accept a less reduction in wages than 13½ per cent. There will in all probability be a further ballot taken at once.

Mr. T. Burt, M.P., addressing the Annual Meeting of the Miners' National Union, held yesterday, strongly advised the men at present on strike to accept arbitration.

Mr. Burt, being perhaps one of the best known authorities on mining matters, it is generally thought his views will have considerable weight at this juncture.

WEST OF SCOTLAND CHEMICALS.

GLASGOW, Tuesday.

Bleaching powder is reported as a shade easier in this market, without any positive retrogression of price, but there is still very little doing. Caustic sodas are all quoted lower again, and borax is again the 10s. back. There are no other price changes in the general market, but complaint is universal as to the obstinate stagnation which has so long prevailed.

There has been no improvement in sulphate of ammonia, the top price being £10. 3s. 9d. spot, with buyers not inclined to offer more than £10. 2s. 6d., at which there has been some business done. Buyers have been offering £10. 3s. 9d. for forward delivery, but this the makers are not disposed to entertain.

In paraffins there is no improvement, but with as yet no further change of price, except in the case of paraffin spirit (naphtha) which makers have dropped to 6d. a gallon. This reduction will hold till the end of August, when it will be again raised to 7d., and so remain over the winter. There has been some conflict of opinion amongst makers about the proposed curtailing of paraffin scale production, but it is expected that this will be amicably arranged at next meeting which is timed for to-morrow. West Lothian Oil Company's shale mines and plant were for the third time without a bid last week.

Chief prices current are:—Soda crystals, £3. 3s. 9d., nett Tyne; alum in lump, £5. 10s., nett Glasgow; soda ash, 1⅜d., less 2½%, Tyne; caustic soda, white, 74°, £11. 10s., 70/72°, £10. 10s., 60/62°, £9. 7s. 6d., and cream 60/62°, £9. 5s., all nett Liverpool; bicarbonate of soda, 5 cwt casks, £6. 15s., and 1 cwt. casks, £7. nett Tyne; refined alkali, 1⅝d., less 2½% Tyne; bleaching powder, £7. 10s. nett Tyne; saltcake, 37s. 6d.; borax, English refined, £29. and boracic acid, £37. 10s., nett Glasgow; bichromate of potash, 3¾d., less 12½% for Scotch and English deliveries (for export 3½d., less 10% f.o.b. Glasgow); bichromate of soda, 2¾d., less 10% for Scotch and English deliveries (for export 2½d., less 10% f.o.b. Glasgow); chlorate of potash, 6¾d., less 5% any port; nitrate of soda, 8s. 10½d. to 9s.; sulphate of ammonia, £10. 2s. 6d. to £10. 3s. 9d. f.o.b. Leith; salammoniac, first and second white, £35. and £33., less 5% any port; sulphate of copper, £15. less 5% Liverpool; paraffin scale (hard), 2 1/16d., and soft 2 15/16d. to 3d. per lb.; paraffin wax, 120°, semi-refined, 3 5/8d. to 4d.; paraffin spirit (naphtha), 6d. a gallon; paraffin oil (burning) 5d., 5¼d. and 5½d. according to kind, at works, for Scotch buyers (English sales about 1d. lower); ditto (lubricating), 865°, £3. 10s. to £4., 885°, £5. 5s. to £7., and 890/895°, £6. to £8. Week's imports of raw sugar at Greenock, 32,598 bags.

New Companies.

Castleton Chemcal Co., Limited.—This company was registered on the 14th inst., with a capital of £7,500., in £25. shares, to acquire and carry on the business of chemical manufacturers, carried on by Messrs. H. Barrett and Co., at the Paragon Chemical Works, Castleton, Lancs. The subscribers are:—

Sh

H. S. Close, Hillam Hall, South Melford, Yorks, chemist ...
J. C. Marshall, Woodbine-terrace, Halifax ...
H. Barrett, 14, Manchester-road, Rochdale, chemist ...
Mrs. J. C. Marshall, Woodbine-terrace, Halifax ...
Mrs. H. S. Close, Hillam Hall, South Melford, Yorks ...
E. Shaw, 17, North-street, Todmorden ...
Mrs. E. Willis, 11, Beech-grove, Harrogate ...

Fletcher, Burrows and Co., Limited.—This company was registered 14th inst., with a capital of £100,000., in £100. shares, to acquire and carry business of colliery owners, miners, coal merchants, coke manufacturers, br tile manufacturers, boat builders, and waggon makers, carried on by Fletcher, Burrows and Co., Atherton, Lancs., and elsewhere. The subscriber

Sh

A. Burrows, Green Hall, Atherton, coal merchant ...
R. Fletcher, "The Hindles," Atherton, coal merchant ...
P. Fletcher, "Briarcroft," Atherton, coal merchant ...
J. S. Burrows, Yew Tree House, Atherton, mining engineer ...
M. B. Burrows, The Laburnums, Atherton, colliery agent ...
Mrs. R. Fletcher, "The Hindles," Atherton ...
F. Fletcher, "The Hindles," Atherton ...
Mrs. P. Fletcher, "Briarcroft," Atherton ...

Fourness Gas Process Syndicate, Limited.—This company was re on the 12th inst., with a capital of £2,000., in £50. shares to purchase a dated September 12th, 1891, and granted to H. Fourness in respect of an in for "Improvements in the manufacture and storage of illuminating and heatin and to carry on the business of manufacturers, storers, and suppliers of and in gas, oil, and other illuminants.

G. J. Moulton and Co., Limited.—This company was registered on th inst., with a capital of £20,000., in £5. shares, to acquire and carry on the b of musk paraffin soap manufacturers, manufacturers of and dealers in matches, blue, blacking, black-lead, starch, etc., carried on under the style F. Moulton and Co., at the Soho Mills, Macclesfield, Cheshire. The sub are:—

Sh

J. Snelson, Kernincham, Congleton, corn merchant ...
C. S. Mellor, Hanley, wholesale grocer ...
G. J. Moulton, Macclesfield, manufacturing chemist ...
J. A. Fox, Macclesfield, soap manufacturer ...
J. Snelson, junr., Goostrey, Cheshire, farmer ...
H. Snelson, Kernincham, Congleton, miller ...
P. Whyman, 690, Rochdale-road, Manchester, grocer ...

Patent Bleach Boiling Machine Syndicate, Limited.—This compa registered on the 12th inst., with a capital of £5,000., in £1. shares, to acquire No. 13,509 of 1891, for bleaching cloth, granted to Mr. C. F. Pike on Augu 1891, and to carry on the business of bleachers, dyers, makers of vitriol bleach dyeing materials, ironfounders, engineers, etc.

Gazette Notices.

PARTNERSHIPS DISSOLVED.

J. Baxeres Torres, and J. Baxeres, Alzugaray, under the style of J. Bax Co., Broad-street-avenue, Bishopsgate-street Within, and Arlington-st chemical and metallurgical engineers, as far as regards J. Baxeres Torre

J. Hague, T. A. Hague, A. E. Hague, and W. Robinson under the sty Hague, Sons and Co., Stalybridge, leather curriers, as far as regards W. son.

W. B. Sharples and D. Goulding under the style of W. B. Sharples Chorley, tallow chandlers, lard refiners, and soap merchants.

J. Baldwin of Breedon, J. Baldwin of Broad Meadow, H. S. Baldw Baldwin, J. P. Wren, and J. W. Chawner, under the style of J. Bald Sons, Birmingham, paper manufacturers and printers, as far as regar Wren.

The Patent List.

This list is compiled from Official sources in the Manchester Te Laboratory, under the immediate supervision of George E. Da Alfred R. Davis, who report professionally upon the value of C Patents.

APPLICATIONS FOR LETTERS PATENT.

Resilient Smoke Consumer. D. W. Freeman. 6,902. April 11.
Winning Gold without using Mercury. A. Gentzsch. 6,927. April
Obtaining Pure Carbonic Acid from Products of Combustion. H. 6,931. April 11.
Apparatus for Producing Alkalies and Chlorine by Electrolysis. 6,949. April 11.
Extracting Stearine and Oleine from Tallow. E. J. J. B. Benoit an Vila. 6,955. April 11.
Antifriction Bearings. S. E. Asquith and A. J. Hayes. 6,968. April
Air Pumps. R. H. Griffin and S. W. Brooks. 6,975. April 12.
Preventing Radiation of Heat from Steam Pipes, etc. J. Gre 7,014. April 12.

LIVERPOOL.

Week ending April 13th.

Asbestos—
Portland, 1 bg. Allan, Bros. & Co.
Barytes—
Antwerp, 6 cks. 40 bgs.
Benzoline—
Rotterdam, 10 cs.
Bone Ash—
Rio Grande do Sul 409 t.
Chemicals (*otherwise undescribed*)
Rotterdam, 6 cks.
Colours—
Antwerp, 8 brls. J. T. Fletcher & Co.
,, 4
Rotterdam, 20 cks. 10 cs.
Copper Pyrites—
Huelva, 1,420 t. Matheson & Co.
,, 1,270 ,, ,,
,, 1,695 Tennants & Co.
Cottonseed Oil—
New York, 1,354 brls.
Cream of Tartar—
Bordeaux, 1 ck.
Dyestuffs—
Algorobilla
Valparaiso, 244, bgs. A. W. Real
Annatto
Akassa, 5 bgs. Royal Niger Co.
Argols
Bordeaux, 11 cks.
Divi divi
Carthagena, 145 bgs. B. Hall & Co.
Savanilla, 316 sks.
Santa Martha, 160 bgs. E. Cortes & Co.
,, 123 ,, ,,
Fustic
Savanilla, 3,083 logs. G. H. Muller & Co.
Gambier
Singapore, 834 brls.
,, 2,556
Indigo
Calcutta, 20 chts.
,, 109
Bombay, 20 cs.
Myrabolams
Bombay, 612 bgs.
Orchella
Lisbon, 34 brls. Benchimal & Sobrinhs
Extract of Dyewood—
New York, 5 brls.
Bordeaux, 300 cks.
Glucose—
Baltimore, 200 brls.
Glycerine—
Rotterdam, 1 dm.
Horn Piths—
Cadiz, 83 sks.
Fray Bentos, 35 t. Liebig's Extract Meat Co.
Cadiz, 52 brls.
Iodine—
Valparaiso, 7 brls. A. Gibb & Sons
Manganese Powder—
Hamburg, 2 cks.
Mineral White—
Trieste, 400 bgs. V. Pazzi
Myrabolams—
Calcutta, 2,000 pkts.
Bombay, 4,694 bgs. D. Sassoon & Co
,, 667
Ochre—
Marseilles, 70 brls.
Rouen, 92 cks. R. J. Francis & Co.
Paint—
Antwerp, 2 cks.
Phosphate—
Ghent, 600 bgs.
,, 2,000 J. T. Fletcher & Co.
Ostende, 750 t.
Phosphate Rock—
Norfolk, qty.
Phosphoric Acid—
Hamburg, 6 cks.
Pitch—
Bordeaux, 26 sks.
Danzig, 96 cks.
Potash—
Portland, 3 brls. H. Moor & Co.
Hamburg, 10 cks.
Pyrites—
Lisbon, 13 cks. Richardson & Co.
Pyrites Sulphate—
Huelva, 1,243 t. Matheson & Co.
Rosin—
Savannah, 4,760 brls.
Saltpetre—
Calcutta, 340 bgs. Ralli Bros.
,, 300
Soap—
Bari, 160 cs.
Boston, 2 cs.
Philadelphia, 900 bxs. 50 cs.
Soda—
Rotterdam, 300 brls.
Stearine—
Boston, 38 brls.
Antwerp, 12 bgs.
Sugar of Lead—
Rotterdam, 39 cks.
Tallow—
Boston, 55 hds.
Philadelphia, 100 brls. 92 hds.
New York, 100
Tartar—
Bordeaux, 7 cks.
Tartaric Acid—
Rotterdam, 20 cks.
Tincal—
Calcutta, 385 bgs.
Ultramarine—
Rotterdam, 21 cs. 17 cks.
Waste Salt—
Hamburg, 202 bgs.
White Lead—
Rotterdam, 52 cks.
Zinc Oxide—
St. Nazaire, 12 brls.
Antwerp, 40 J. T. Fletcher & Co.
,, 30 cks. 72 brls.

HULL.

Week ending April 16th.

Antimony—
Hamburg, 15 cs. Wilson, Sons & Co., Ltd.
Asbestos—
Flushing, 2 bls. Zeeland S. S. Co.
Barytes—
Antwerp, 30 cks. Bailey & Leetham
,, 42 H. F. Pudsey
Bremen, 44 Tudor & Sons
,, 60
Carbonic Acid—
Stettin, 1 ck. Wilson, Sons & Co., Ltd.
Chemicals (*otherwise undescribed*)
Hamburg, 42 pks. Wilson, Sons & Co., Ltd.
,, 20 pkgs. Furley & Co.
Amsterdam, 2 kgs. W. & C. L. Ringrose
Bremen, 3 cs. 1 ck. 20 kgs. Veltmann & Co.
,, 1 2 Wilson, Sons & Co., Ltd.
Antwerp, 123 pks. ,, ,,
Dunkirk, 20 ,, ,,
Colours—
Rotterdam, 31 pks. W. & C. L. Ringrose
,, 30 cks. Reckitt & Sons
,, 2 cs. Hutchinson & Son
Hamburg, 1 cs. Wilson, Sons & Co., Ltd.
,, 1 brl.
Rotterdam, 10 cks. Hutchinson & Son
,, 32 31 cs. W. & C. L. Ringrose
,, 2 G. Lawson & Sons
Hamburg, 3 cs. C. M. Lofthouse & Co.
Flushing, 29 pks. 19 cs. 17 cks. Zeeland S. S. Co.
Antwerp, 25 cks. Bailey & Leetham
Bremen, 2 Veltmann & Co.
,, 7 cs. 1 ck. G. Malcolm & Son
Flushing, 19 cks. Zeeland S. S. Co.
Antwerp, 60
Dunkirk, 3 cs. 35 brls. Wilson, Sons & Co., Ltd.
Rotterdam, 2 pks. G. Lawson & Sons
,, 2 cks. Todd & Son
,, 72 pks. W. & C. L. Ringrose
Cottonseed—
Smyrna, 1,078 t.
Beyrout, 831
Alexandria, 1,853
Cryolite—
Copenhagen, 1 ck. Wilson, Sons & Co., Ltd.
Dyestuffs—
Alizarine
Rotterdam, 25 pks. W. & C. L. Ringrose
,, 35 cks. Hutchinson & Son
,, 71 pks. W. & C. L. Ringrose
Argols
Bari, 4 cks. Wilson, Sons & Co., Ltd.
Madder
Rotterdam, 1 ck. G. Lawson & Sons
Sumac
Palermo, 820 bgs.
Valonia
Smyrna, 400 bgs.
Farina—
Hamburg, 30 bgs. Wilson, Sons & Co., Ltd.
Ghent, 11 cs. Lawrence & Son
Stettin, 250 pkgs. Wilson, Sons & Co., Ltd.
Ochre—
Rouen, 23 cks. J. W. Hill & Co.
Phosphate—
Antwerp, 100 bgs.
Ghent, 101 t. 102 bgs.
Phosphate Rock—
Aruba, 350 t. Haagensen, Watt & Co.
Pitch—
Hamburg, 59 cks. W. Jackson & Sons
Stettin, 27
Amsterdam, 100 Wilson, Sons & Co., Ltd.
Plumbago—
Hamburg, 10 cks. Furley & Co.
Pyrites—
Huelva, 600 t. J. Dalton, Holmes & Co.
Saltpetre—
Hamburg, 48 cks.
,, 10 kgs. C. M. Lofthouse & Co.
Soap—
New York, 500 bxs.
Stearine—
Antwerp, 12 bgs. Bailey & Leetham
,, 10 Wilson, Sons & Co., Ltd.
Talc—
Hamburg, 1 keg. Wilson, Sons & Co., Ltd.
Tartar—
Bari, 1 ck. Wilson, Sons & Co., Ltd,
Ultramarine—
Rotterdam, 1 cs. Hutchinson & Son
Varnish—
New York, 9 brls.
Waste Salt—
Hamburg, 500 bgs. G Lawson & Sons
,, 226 G. Lister & Co.
White Lead—
Antwerp, 49 cks. Bailey & Leetham
Ghent, 20
Rotterdam, 10 Sissons, Bros. & Co.
,, 10 T. F. Chambers & Co.
,, 9 Hanger, Watson, & Harris

GLASGOW.

Week ending April 21st.

Alum—
Rotterdam, 39 cks. G. & J. Boyd
Hamburg, 105
Arachide Oil—
Rotterdam, 2 cks. J. Rankine & Son
Barytes—
Rotterdam, 114 cks.
Colours—
Rotterdam, 21 cks. 6 cs. J. Rankine & Son
,, 20 G. & J. Boyd
Hamburg, 2
Cottonseed Oil—
New York, 250 brls.
Dyestuffs—
Alizarine
Rotterdam, 40 cks.
,, 57
Dyewood Extract
Antwerp, 7 cks.
Glucose—
New York, 1 kg. 100 brls.
Glycerine—
Rotterdam, 22 css. J. Ranki
Paint—
Hamburg, 1 cs.
Potash—
Hamburg, 72 cks.
Sugar of Lead—
Hamburg, 13 cks.
Stearine—
Philadelphia, 120 sks.
Tallow—
New York, 100 hds.
Tar—
New York, 654 brls.
Waste Salt—
Hamburg, 60 t.
Zinc White—
Rotterdam, 100 cks. J. Ranki
White Lead
Rotterdam, 27 cks.
Zinc Oxide—
New York, 100 brls.

TYNE.

Week ending April 16

Barytes—
Rotterdam, 20 cks. Tyne
Cryolite—
Copenhagen, 1 ck.
Ochre—
Rouen, 160 cks. W. Your
Sodium Nitrate—
Pisagua, 10,121 bgs. J. Sw
Sulphur Ore—
Memel, 400 t. Bede M
Ultramarine—
Rotterdam, 2 cs. Tyne

GOOLE.

Week ending April 6t

Chemicals (*otherwise undes*
Rotterdam, 17 bgs.
Copper Pyrites—
Huelva, 500 t.
Seville, 1,200
Dyestuffs—
Alizarine
Rotterdam, 116 pkgs.
Dyestuffs (*otherwise unde*
Boulogne, 84 cds. 22 pkg
Farina—
Hamburg, 1,097 bgs.
Delfszhl, 403
Glucose—
Calais, 300 bgs.
Dunkirk, 100
Logwood—
Rotterdam, 5 cds.
Potash—
Rotterdam, 19 cks.
Calais, 21
Dunkirk, 61 44 drs.
Saltpetre—
Hamburg, 2 cds.
Rotterdam, 100 bgs.
Antwerp, 135
Sodium Silicate—
Rotterdam, 1 ck.
Sulphide of Antimony—
Boulogne, 5 cks.
Waste Salt—
Hamburg, 469 cks. 480 cds

GRIMSBY.

Week ending April 9

Chemicals (*otherwise undes*
Hamburg, 31 pkgs.
Rotterdam, 5
Farina—
Hamburg, 100 pkgs.
Glycerine—
Dieppe, 9 cds.
Size—
Antwerp, 7 cds.

EXPORTS OF CHEMICAL PRODUCTS

OF

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

eek ending April 20th.

tar,	1 ck.	£15
x,	2 cs.	15
en—		
urne,	6 t. 10 c.	£100
—		
	2 t.	£20
idon,	7 c.	12
ium Carbonate—		
y,	10 cs.	£14
ork,	60 pkgs.	£280
ium Chloride—		
	3 cks.	£36
ia (Liquid)—		
	12 drs.	£26
ium Sulphate—		
rp,	50 t.	£550
dam,	50 14 c.	530
	30 9	320
	100 14	1,042
oes,	35 8	366
ara,	15 6	157
,	50 4	529
t,	30	307
oupe,	117	1,178
e—		
,	2 t.	£24
i Chloride—		
ork,	6 c.	£24
i Nitrate –		
ork,	3 t.	£59
c Acid—		
elphia,	1 cs.	£7
ite of Lime—		
own,	1 t. 11 c.	£12
–		
dam,	10 cks.	£25
arg,	8	64
one—		
	1 t. 10 c.	£11
ondon,	45 kgs.	17
c Soda—		
ne,	5 t 10 c.	£59
Bay,	8	13
ondon,	6	11
ic Acid –		
rn,	11 cs.	£29
,	5	18
ncisco,	25 brls.	120
elphia,	10 c.	114
ieff,	6 t. 18 c.	220
cals (*otherwise undescribed*)		
ne,	4 cks.	£168
ara,	3 pkgs.	16
urne,	10 cs.	18
Town,	8 pkgs.	32
Bay,	1 c.	12
,	20 kgs.	11
and,	4 pkgs.	23
ra,	9 kgs.	10
ide,	120 pkgs.	160
Acid—		
urg,	2 t. 10 c.	£388
g,	6	48
,	5	42
York,	2	336
rp,	1	168
lona,	5 cks.	205
'roducts—		
line		
),	10 cs.	£150
urne,	1	13
gne,	1 ck.	34
line Dye		
ay,	1 cs.	£10
York.	22 runs	170
line Oil		
dam,	12 dms. 12 drs.	£875
	12	400
line Salts		
York.	22 rns.	£170
hracene		
ldorf,	699 cks.	£5,287
dam,	77	305
zol		
elphia,	19 pns.	£175
dam,	48 cks. 46 dms.	814
	20 cks. 7 runlets	347
,	50 pns.	471
Rotterdam,	31 drs.	450
Coal Tar Dyes		
Calcutta,	2 cs.	£92
Creosote		
Philadelphia,	8 cs.	£80
Bordeaux,	819 brls.	189
Creosote Oil		
Trinidad,	25 cks.	£11
Naphtha		
Calais,	38 brls.	£72
Naphthalene		
Hamburg,	172 pkgs. 48 bgs.	£162
Treport,	58 cks.	67
Stettin,	100 bgs.	38
Hamburg,	201 pkgs.	£77
Nitro Naphthalene		
Cologne,	5 cks.	£40
Paraffin Wax		
Melbourne,	40 bgs.	£126
Hobart,	30 cs.	102
Launceston,	40 bgs.	126
Pitch		
Dunkirk,	2,238 t.	£5,405
Baltimore,	392 bgs.	100
Havre,	415 t.	643
Madagascar,	20 dms.	4
Venice,	1,359 t.	2,022
Christiania,	100 fkns.	10
Antwerp,	515 t.	901
Madras,	75 rnlts.	56
Gijon,	1,049 t.	1,835
Pyridine		
Hamburg,	23 cks.	£208
Tar		
Rio de Janeiro,	180 runs.	£102
Natal,	565 drs.	32
Adelaide,	60	23
Gothenburg,	150 rnlts.	105
Malmo,	100 brls.	50
Melbourne,	100 drs.	20
Hamburg,	45 brls.	40
Tar Oil		
Treport,	30 brls.	£40
Toluol		
Philadelphia,	10 pns.	£90
Rotterdam,	24 cks.	68
Condy's Fluid—		
Melbourne,	17 cs.	£3
Copperas—		
Rabat,	5 t. 5 c.	£12
Copper Sulphate—		
Tarragona,	9 t. 2 c.	£128
Melbourne,	5 14	75
Antwerp,	10	150
Cream of Tartar—		
Melbourne,	3 c.	£16
East London,	1 4 cs.	17
Disinfectants—		
Sydney,	21 cs.	£66
Melbourne,	5	33
Calcutta,	45 pkgs.	32
Guano—		
Valencia,	14 t. 14 c.	£119
Genoa,	25	250
Dominica,	10	120
Guadeloupe,	270	2,970
Hydrofluoric Acid—		
Algoa Bay,	4 c.	£27
Hypophosphite of Lime—		
New York,	1 t.	£247
Philadelphia,	1	276
Manure—		
Valencia,	222 t.	£1,776
Cullera,	103	824
Gandia,	216	1,726
Demerara,	50	449
Rotterdam,	11 5 c.	90
Antigua,	10	23
St. Kitts,	11	116
Nevis,	3 10	37
Trinidad,	524 15	2,735
Barbadoes,	120	1,300
Ghent,	152	1,596
Gothenburg,	77 19	318
Amsterdam,	100	1,075
Gothenburg,	116 19	462
Jersey,	50	421
Mirbane—		
Sydney,	14 c.	£48
New York,	50 cs. 2 drs.	210
Hamburg,	10	44
Phosphorus—		
St. Cruz de Teneriffe,	5 cs.	£55
Oporto,	2	22
Potash Crystals—		
Lyttleton,	10 c	£30
Potash Salts—		
Natal,	30 t.	£4,230
Potassium Bichromate—		
Melbourne,	1 t	£37
Potassium Cyanide—		
Algoa Bay,	1 c.	£13
Salammoniac—		
Antwerp,	20 cks.	£66
Salicylic Acid—		
Melbourne,	2 cs.	£65
Sydney,	3	98
Saltpetre—		
Savanilla,	4 t. 14 c.	£82
Natal,	5	6
Newcastle,	1	22
San Francisco,	1 5	30
Gothenburg,	1	21
Vigo,	13	
Corunna,	2 13	71
Aden,	5 8	120
Salt Cake—		
Ghent,	115 t.	£201
Sheep Dip—		
Sydney,	850 pkgs.	£677
East London,	100 drs. 5 cs.	48
Soda—		
Brisbane,	1 t. 10 c.	£12
East London,	4	11
Natal,	10	4
Huelva,	1 12	6
Brisbane,	11	30
Soda Ash—		
Lisbon,	8 t. 7 c.	£44
Soda Crystals –		
Cape Town,	7 c.	£1
Algoa Bay,	2 t. 6	8
Natal,	2 2	8
Trinidad,	1 3	4
Sodium—		
New York,	3 t. 3 c.	£490
Sodium Acetate—		
Sydney,	1 t. 10 c.	£61
Sodium Bicarbonate—		
Brisbane,	5 c.	£4
Wellington,	10 t.	66
Rotterdam,	2	15
Sodium Carbonate—		
East London,	6 c.	£5
Trinidad,	1 t. 4	10
Sodium Oxalate—		
New York,	4 c.	£14
Sodium Sulphate—		
Demerara,	6 c.	£2
Strontium Carbonate—		
New York,	11 c.	£23
Strontium Nitrate—		
New York,	9 t. 6 c.	£263
Sulphuric Acid—		
Cape Town,	1 t. 10 c.	£15
Algoa Bay,	6	24
,,	20 drs.	23
Natal,	10 cs.	10
Trinidad,	2 t. 10 c.	10
Sulphur—		
Lisbon,	250 brls.	£211
Madeira,	15	12
Superphosphate—		
Barbadoes,	18 t.	£64
Guadeloupe,	45	180
Tartaric Acid—		
Auckland,	15 c.	£81
B. Ayres,	10 cks.	55

LIVERPOOL.

Week ending April 20th.

Ammonium Carbonate—		
Hamburg,	5 c.	£8
Vigo,	9	13
San Sebastian,	4	6
Alum—		
Santos,	1 t.	£5
Bombay,	9 1 c.	49
Calcutta,	10 7	59
Constantinople,	3 15	19
Havana,	4 5	22
Heraklia,	2 17	15
Lisbon,	5 11	28
Seville,	5 7	28
St. John's, Nfld.,	7 10	45
Smyrna,	9 15	50
Vigo,	2	9
Beyrout,	4	21
Montreal,	26 10	140
Galatz,	9 14	52
Alum Cake—		
Calcutta,	10 t. 15 c. 2 q.	£30
Ammonium Sulphate—		
Grand Canary,	6 t. 1 c. 1 q.	£63
Antwerp,	50 6 2	550
Genoa,	50 4	52
Barcelona,	90 8 2	917
Charlotte Town,	1	11
Barbadoes,	20	212
Las Palmas,	50 7	516
Valencia,	101 4 5	1,067
Arucas,	10 6 3	120
Arseniate of Soda—		
Boston,	6 cks.	
Paris,	10 brls.	
Rouen,	5	
Bleaching Powder—		
Boston,	88 cks.	
Chicago,	30 bxs.	
Genoa,	53	
New York,	45	
St. Jerome,	20	
Venice,	5	
Amsterdam,	6	
Baltimore,	197	
Bombay,	10 cs.	
Boston,	523	
New York,	213 10	
San Sebastian,	30	
Dunedin,	8 brls.	
Boston,	338	
Boracic Acid—		
Havana,	1 ck.	
Valencia,	2 c. 1 q.	£5
Borate of Lime—		
Bremen,	10 t. 3 c.	£120
Borax—		
San Sebastian,	4 c. 2 q.	£7
Stettin,	1 t. 3	32
Antwerp,	1 1 3	32
Sydney,	2	57
Hamburg,	1 3	35
Norrkoping,	16 3	25
San Juan,	5	7
Rotterdam,	4 cks.	
Rouen,	31	
Galatz,	20 kgs.	
Havana,	2	
Calcined Magnesia—		
M. Video,	2 q.	£67
Calcium Phosphate –		
New York,	8 c.	£11
Carbolic Acid—		
Shanghai,	4 cs.	£17
New Orleans,	1 c. 1 q.	21
Montreal,	2	10
Yokohama,	20	50
St. Johns, Nfld.,	10	39
Caustic Potash—		
New York,	14 t. 11 c.	£300
Ontario,	15	17
Chicago,	3 1	66
Caustic Soda—		
Bahia,	25 dms.	
Chicago,	50 bxs.	
Corunna,	20 brls.	
Genoa,	36	
Hamburg,	4	
Puerto Cabello,	20	
Rouen,	35	
Seville,	56 50	
Sourabaya,	100	
Alexandria,	16	
Aracaju,	15	
Bahia,	115	
Bombay,	23 cs.	
B. Ayres,	100	
Fiume,	50	
Galatz,	10 kgs.	
Genoa,	93	
Hamburg,	15	
Kobe,	105	
Lisbon,	12	
Madrid,	50	
Malaga,	20	

Naples, 71
New York, 205
Oporto, 38
Pernambuco, 110
Valparaiso, 200
Yokohama, 50
Boston, 300
Rouen, 70
Savanilla, 1 ck. 39
Algoa Bay, 8
Alicante, 20 30
Antwerp, 35
Baltimore, 170
Bilbao 178
Bombay, 10
Boston, 125
Ceara, 5
Matanzas, 50
Galatz, 7
Malta, 5
Naples, 100
Newcastle, N.S.W., 30 dms.
Puerto Cabello, 8
Valencia, 30

Chemicals *(otherwise undescribed)*
Hamburg, 1 t. 5 c. 2 q. £45
Palermo, 9 1 15
Stockholm, 5 9
Alexandria, 2 1 64
Rotterdam, 11 2 20
Boma, 2 cs. 6
Ibrail, 4 75
Genoa, 10 17
Odessa, 8 1 261

Citric Acid—
Montreal, 8 c. £64
Ibrail, 2 17

Copperas—
Syra, 4 t. 2 c. £9
Heraklia, 5 16 11
Montreal, 19 13 39
Alexandria, 8 15 16
San Francisco, 28 60

Copper Sulphate—
Ghent, 12 t. 14 c. 3 q. £182
Tarragona, 7 9 3 113
Algiers, 8 17 130
Genoa, 9 19 140
Venice, 7 6 1 112
Talcahuano, 1 7 21
Bordeaux, 60 9 1 902
Dunkirk, 3 14 2 51
Fairwater, 2 19 45
Konigsberg, 11 8
Marseilles, 199 11 3,078
Nantes 37 12 1 587
New Fairwater, 1 8 1 19
New Orleans, 15 225
Rostrock, 2 10 36
Rouen, 11 7 160

Cream of Tartar—
Maranham, 1 c. 2 q. £6
St. John's, Nfld., 2 2 11

Gypsum —
New York, 35 t. 12 c. £122

Iodine—
Rosario, 2 q. £20

Lead Acetate—
Calcutta, 1 t. 10 c. £44
Havana, 4 2 q. 6

Lead Nitrate—
Montreal, 1 t. 9 c. £32

Magnesia—
Melbourne, 20 cs.
Valparaiso, 20

Magnesium Carbonate—
Gualdaljara, 4 cs. £8

Magnesium Chloride—
Bombay, 38 dms.
Hiogo, 200 £5

Magnesium Sulphate—
Detroit, 1 t. 1 c. 3 q. £25
Rio de Janeiro, 40 kgs.

Manure—
Antwerp, 7 t. 11 c. 3 q. £55
Charlottetown, 8 10 27
Marseilles, 110 4 2 685

Metallic Sodium—
Rotterdam, 1 cs.
Tampico, 1

Oxalic Acid—
Trieste, 1 t. £28
Venice, 1 14 c. 48

Phosphorus—
San Francisco, 5 cs. £55
Yokohama, 10 94
Hiogo, 35 382
Kobe, 5 47
Shanghai, 10 100

Picric Acid—
M. Video, 1 c. £7

Pitch—
Brindisi, 1,414 t.
Callao, 10 brls.
Carril, 50
Rouen, 39
Valparaiso, 36
Bordeaux, 92
Cette, 1,003
Singapore, 15

Potash—
Catania, 1 t. 9 c. £42

Potassium Bichromate—
Havana, 4 c. 3 q. £9

Potassium Carbonate—
New York, 7 t. 2 c. £114
" 7 7

Potassium Chlorate—
Yokohama, 2 t. 10 c. £114
Hiogo, 17 10 739
New York, 14 959
Rotterdam, 1 47
Pasages, 1 50
Stockholm, 2 10 117
Trieste, 10 25
Sydney, 7 10 342
Hamburg, 1 50
B. Ayres, 2 10 115
Hong Kong, 1 10 68
Naples, 2 93
Antwerp, 15 15
Copenhagen, 1 10 73

Potassium Stannate—
Bombay, 16 c. 3 q. £68

Potassium Sulphate—
Charlottetown, 10 c. £6

Prussiate of Potash—
Constantinople, 11 c. 3 q. £48
Bombay, 2 10

Salammoniac—
Mersyne, 3 c. 2 q. £6
Smyrna, 1 t. 2 36
Odessa, 6 1 1 204
Philadelphia, 9 16 237
Trieste, 2 6 73
Alexandretta, 9 15
New York, 24 3 676
Montreal, 1 3 17
Galatz, 9 3 18
Victoria, B.C., 5 8

Salt Cake—
Baltimore, 341 cks.
" 29 t. 4 c. £73

Salt—
Akassa, 400 t.
Boston, 100
Brisbane, 50
B. Ayres, 30
Cabenda, 161 14 c.
Calcutta, 659
Chicago, 100
Ghent, 60
Havre, 30 r. 10
Landana, 5
Loango, 24 11
Matadi, 25
Melbourne, 153½
Miramichi, 149 7
Mossuco, W.C.A., 50 t.
Newcastle, N.S.W., 100
Newport News, 300
New York, 76
Noqui, W.C.A., 100
Old Calabar, 115
Rotterdam, 211
San Francisco, 85
Sydney, 550
Talcahuano, 9
Trinidad, 17
Victoria, W.C.A., 10½
Axim, 5
Boston, 165
Cameroons, 33½
Dalhousie, N.B., 200
Halifax, 500
New York, 100
Picton, 415
Quebec, 781
Samana, 15
Abonnema, 14
Buguma, 20
Calcutta, 2,494
Cleveland, 65
Manaos, 28½
Opobo, 40
Aalborg, 200
Antwerp, 70
Bay Verte, 250
Beaver Point, 200
Belize, 257¼
Cape Town, 75
Charlottetown, 550
Conakry, 25
Copenhagen, 226
Ghent, 160
Halifax, 1 1 c.
Hamburg, 32 8
Iceland, 94
Lagos, 42
Newcastle, N.S.W., 100
New York, 5
Picton, N.S., 250
Punta Arenas, 20
Quebec, 1,100
Que Eboe, 47
Rotterdam, 214
Santos, 1
Sherbro, 220
Sierra Leone, 100
Sydney, 50
Valparaiso, 500
Wilmington, 244
Winnebah, 20

Saltpetre—
Savanilla, 14 c. £14
Ceara, 1 t. 8 32
Malta, 4 5
Rio de Janeiro, 19 2 q. 22
Pernambuco, 2 13 2 66

Sheep Dip—
Baltimore, 10 cks. £50

Soap—
Alexandria, 18 cs.
Algoa Bay, 50 bxs.
Barbadoes, 200
Bombay, 6
Boston, 2 cks.
Brussels, 1,000
B. Ayres, 40
Constantinople. 5
Curacao, 275
Dry Harbour, Jam., 75
Durban, 100
E. London, 121 639
Grand Canary, 20
Hamburg, 345
Kurrachee, 250
Lanzarotte, 40
Livingston, 150
Loanda. 300
Matadi, 7
New York, 50
Philadelphia, 1
Port Natal, 12
Rouen, 10
St. Ann's Bay, 50
St. John's, Nfld., 6
Singapore, 200
Sydney, 3
Trinidad, 800
Old Calabar, 1,250
Opobo, 250
Para, 200
Patras, 10 pkgs.
Picton, 30 bxs.
Port Said, 10
Rangoon, 500
Rio de Janeiro, 5 brls.
St. John's, Nfld., 124 bxs.
Shanghai, 4,195
Sherbro, 350
Singapore, 1,631
Valparaiso, 104
Accra, 100
Algoa Bay, 3 cs.
Bathurst, 20
Belize, 525
Bombay, 14 350 37 brls.
Calcutta, 20 250
Callao, 6
C. C. Castle, 20
Cape Town, 100
Colon, 200
Constantinople, 5 cks.
Matanzas, 50
Smyrna, 1
Trinidad, 700
Valparaiso, 8 4 frks.
Manaos, 1,050 bxs.
Alexandria, 21 40
Bombay, 5
Brussels, 1,000
Cape Town, 614
Grand Bassa, 25
Hamburg, 40 dms.
Iquique, 1 cs.
Montreal, 154
New York, 2 10
Para, 1
Paris, 25
St. John's, Nfld., 10
Salonica, 5
Shanghai, 2,500
Sydney, 1,480
Toronto, 404
Trinidad, 400
Valparaiso, 12
Winnebah, 12

Soda Alkali—
Montreal, 35 brls.

Soda Ash—
Baltimore, 112 tcs.
Boston, 41 cks.
Buenos Ayres, 50
Cadiz, 10
Puerto Cabello, 10
Salonica, 100 brls.
Sydney, 20
Baltimore, 410 tcs. 296 cks.
Boston, 216 186
Brisbane, 21 kgs. 120 brl
B. Ayres, 100
Canada,
Ghent, 14 cks.
Montreal, 60 tcs.
New York, 315 33 cks.
Oporto, 34
Philadelphia, 620 168
Portland, Me., 49
Rio de Janeiro, 260 brls.
Adelaide, 38
Baltimore, 48
Bombay, 13
Boston, 41
B. Ayres, 10 100
Calcutta, 50
Callao, 15
Monte Video, 10
New York, 809 tcs. 69 c. 9
Oporto, 21
Philadelphia, 87
Porto Alegre, 50 brls.
Rio de Janeiro, 100
Salonica, 100

Soda Crystals—
Brisbane, 14 kgs.
Charlottetown, 10 brls.
Gijon, 4
Boston, 280
Ibrail, 10

Sodium Biborate—
Progreso, 5 c.
Rotterdam, 2 t. 1 c. 3 q.
Havre, 5 2
Yokohama, 4 15 1
Valencia, 1 2 3
Gijon, 13 brls.
Hamburg, 61 cks.

Sodium Bicarbonate—
Genoa, 50 brls.
Malaga, 20 kgs.
Valparaiso, 2
Amsterdam, 40
Antwerp, 50 bgs.
Brisbane, 200 kgs.
Canada, 50
Hamburg, 80
Havre, 65 8 cks.
Melbourne, 40
Montreal, 750
Rotterdam, 25
Sydney, 100
Alicante, 50
Bilbao, 20
Bombay, 40
Calcutta, 250
Genoa, 20
Kobe, 500
Messina, 20
Monte Video, 10
Odessa, 400
Palermo, 10
St. George, 20
Smyrna, 60
Valencia, 69 19
Yokohama, 250
Seville, 88 pkgs.

Sodium Bichromate—
Genoa, 4 cks.
Seville, 5
Calcutta, 7 c.

Sodium Carbonate—
Gijon, 2 cks.
New York, 26 56 brls.
Boston, 84
New York, 98

Sodium Chlorate—
Yokohama, 2 t. 10 c.
Hamburg, 1
" 4 cks.
Rotterdam, 4

Sodium Hyposulphite—
New Orleans, 15 t.
Mexico City, 25 kgs.

Sodium Nitrate—
Rio de Janeiro, 33 bgs.
Leghorn, 31 t. 9 c. 1 q
Lisbon, 10 1
Almeria, 4 13 1

Sodium Silicate—
Rangoon, 7 cks.
Valencia, 12 brls.
Ghent, 7
Para, 5
Alicante, 16

Sulphate—
18 t. 18 c. 1 q. £57
Sulphite—
phia, 100 brls.
e of Soda—
1 kg.
—
a, 2 c. £2
lphia, 333 bgs. 259
's, Nfd, 50 brls. 45
d, 801 667
1,336 1,937
Ore—
ork, 77 t. 14 c £65
osphate—
Canary, 4 t. 1 c. 2 q. £17
abar, 10 brls.
c Acid—
al, 3 t. 2 c. £245
loride—
, 5 t. 4 c. 3 q. £88

GLASGOW.

Week ending April 21st.

ium Sulphate—
d, 4 t. 19 c. £59
ra, 72 5¼ 807
a, 3 13 40
ork, 28 12¾ 325
e, 134 1¼ 1,568
—
lam, 6 dms. £96
ne—
21 c. £34
10 t. 8¼ 333
nia, 2 cks. 26
e, 560¾ 915
ing Powder—
y, 62½ c. £24
als *(otherwise undescribed)*
e, £220
ra, 25
le of Lime—
6 t 12 c. £54
form—
y, 236 lbs. £22. 10s.
as—
y, 24 t. 9½ c. £65
te Oil—
ux, 180 t. £200
ffs—
arine
dam, 7 cks. £110
—
dam, 25 c. £35
d Oil—
Colony, 70¾ c. £81
od—
dam, 13 t. 7 c. £92
e—
ad, 15 t. £180
ara, 76 19 c. 764
York, 536 205
te, 287 10½ 2,343
ha—
20 t. 8¾ c. £300
—
York, £81
£1. 5s.
tar, 2 c. 21
, 34½ 24
In Wax—
Colony, 92¾ c. £190
te, 7 t. 3¾ 220
—
der, 220 t. 18 c. £331. 7s.
. 59 9 £75
y, 21 15 42
39 10 110
chelle, 100
ium Bichromate—
112½ c. £190
dam, 3 cks. 34
y, 150
, 199 348
, 6 t. 15½ 155
—
y, 169 c. £43
-
ad, 8 t. 13 c. £155
1 10¼ 26

Sodium Bichromate—
Genoa, 133¾ c. £15c
Sodium Nitrate—
New York, 13 t. 6¾ c. £130
Tallow—
Natal, 1 t. 3 c. £42
Tar—
Bombay, 9 t. 12½ c. £26
,, 655 brls. 492
,, 22 t. 45
White Lead—
Cape Colony, 65¾ c. £79
Natal, 7 t. 14 116

HULL.

Week ending April 16th.

Acetate of Lime—
Danzig, 540 bls.
Alkali—
Danzig, 21 bls.
Rotterdam, 37 dms.
Alum—
Bombay, 825 brls.
Copenhagen, 4 cks.
Antimony—
Reval, 40 cs.
Benzol—
Ghent, 3 dms.
Bleaching Powder—
Boston, 98 cks.
Stettin, 302
Borax—
Stettin, 9 cks.
Caustic Soda—
Bombay, 35 drms.
Danzig, 175
Konigsberg, 34
Libau, 88
Stettin, 67
Chemicals *(otherwise undescribed)*
Alexandria, 11 cks.
Bremen, 20
Bombay, 40 drms.
Copenhagen, 10 cs.
Christiania, 7 7 6 pkgs.
Danzig, 64 13
Dunkirk, 1
Gothenburg, 10
Hamburg, 1 50 70
Kurrachee, 40
Konigsberg, 9
Libau, 7
New York, 200
Rotterdam, 27 60 1
Reval, 100
Stockholm, 2 2 2
Stettin, 18
Copper Sulphate—
Drontheim, 9 cks.
Danzig, 23
Cottonseed Oil—
Antwerp, 475 c.
Flushing, 236
Gothenburg, 160
Hango, 18
Hamburg, 4,576
Konigsberg, 100
Rotterdam, 2,353
Stockholm, 600
Stettin, 372
Creosote—
Danzig, 100 brls.
Creosote Salts—
Antwerp, 95 bgs.
Dyestuffs *(otherwise undescribed)*
Bombay, 9 cks.
Christiania, 2 25 bgs.
Danzig, 3 cs.
Hamburg, 3
Stettin, 2 255
Linseed Oil—
Bordeaux, 21 c.
Bombay, 69
Copenhagen, 183
Christiania, 729
Christiansand, 32
Drontheim, 123
Hango, 105
Hamburg, 1,859
New York, 88
Rotterdam, 220
Stettin, 208
Manure—
Dunkirk, 295 bgs.
Ghent, 573 bls.
Hamburg, 1,501
Rotterdam, 300

Oxalic Acid—
Bombay, 10 cks.
Painters' Colours—
Antwerp, 20 cs. 23 cks.
Amsterdam, 13
Bremen, 20
Boston, 3 95 pks.
Bombay, 25 37
Copenhagen, 1 17
Christiansand, 78 14 dms.
Christiania, 1 6
Christiansand, 1 2 100
Drontheim, 5 57 95
Danzig, 18
Dunkirk, 2
Gothenburg, 2 41 1
Ghent, 1
Hamburg, 35
Libau, 1
New York, 10 183
Rotterdam, 3 18 4
Rouen, 1
Stockholm, 1
Stettin, 45 30
Paint—
Alexandria, 340 kgs. 2 cks. 3 drms.
Pitch—
Antwerp, 580 t.
Dunkirk, 23
Soap—
Amsterdam, 1 cs.
Drontheim, 20
Tallow—
Alexandria, 10 cks.
Stettin, 10
Tar—
Copenhagen, 13 cks.
Christiania, 10
Danzig, 8
New York, 10 dms.
Stettin. 6
Hamburg. 25
Turpentine—
Alexandria, 6 drms.
Christiania, 1 cs. 1 ck. 184 kgs.
Yarnish—
Alexandria, 2 cs. 2 cks.
Antwerp, 6 18 2 drms.
Amsterdam, 5
Bombay, 5
Copenhagen, 9 pks.
Hamburg. 3 7 2
Rotterdam, 2

TYNE.

Week ending April 16th.

Alkali—
Antwerp, 5 t. 3 c.
Savona, 10 18
Genoa, 5 16
Alum—
Rotterdam, 10 t. 2 c.
Ammonia—
Valencia, 50 t. 10 c.
Leghorn, 80
Ammonium Carbonate—
Genoa, 10 c.
Antimony—
Hamburg, 1 t.
Arsenic—
Gothenburg, 1 t. 1 c.
Genoa, 7
Bleaching Powder—
Bergen, 2 t. 10 c.
Lisbon, 10 2
Antwerp, 41 15
Hamburg, 24 7
Christiania, 8 2
Genoa, 67 2
Gothenburg, 1 6
Pasages, 30 6
Rotterdam, 9 4
Konigsberg, 77 18
Gothenburg, 10 3
Horsens, 15 13
Drontheim, 10 2
Caustic Soda—
Lisbon, 4 t. 19 c.
Antwerp, 10 3
Hamburg, 1 15
Genoa, 101 4
Pasages, 26 19
Gothenburg, 4 19
Horsens, 1 14 5 drms.
Cement—
Bergen, 16 t. 1 c.
Lisbon, 69 12
Valencia, 18
Colours—
Naples, 1 t. 3 c.
Copperas—
Horsens, 1 t. 8 c.
Litharge—
Lisbon, 14 c.
Hamburg, 2 t. 10
Horsens, 16
Magnesia—
Hamburg, 12 c.
Genoa, 18
Naples, 1
Bilbao, 1 t. 18
Horsens, 1 10
Manganese—
Bilbao, 110 t.
Paint—
Bergen, 1 t. 9 c.
Antwerp, 15
Bilbao, 11
Phosphorus—
Genoa, 2 t. 9 c.
Plumbago—
Bilbao, 10
Salammoniac—
Genoa, 1 t. 1 c.
Soda—
Lisbon, 5 t. 5 c.
Rotterdam, 3 4
Gothenburg, 300 7
Horsens, 8 10
Soda Ash—
Lisbon, 15 17
Antwerp, 5 3
Bergen, 3 9
Konigsberg, 76 7
Gothenburg, 25
Horsens, 66 yds.
Sodium Hyposulphite—
Hamburg, 27 t. 2 c.
Genoa, 1 9
Sodium Silicate—
Bilbao, 11 t. 4 c.
Sodium Sulphate—
Catania, 1 t. 19 c.
Sulphur—
Antwerp, 12 t. 10 c.
Christiania, 25
Rotterdam, 20
Gothenburg, 25
Superphosphate—
Lauvig, 15 t.
White Lead—
Horsens, 1 t. 9 c.

GOOLE.

Week ending April 6th.

Benzol—
Rotterdam, 35 cds.
Chemicals *(otherwise undescribed.)*
Hamburg, 2 cds.
Rotterdam, 79
Coal Products—
Ghent, 3 cs.
Dyestuffs *(otherwise undescribed)*
Rotterdam, 23 cds.
Dyestuffs—
Fustic
Riga. 833 t.
Manure—
Bruges, 288 bgs.
Hamburg, 107
Rotterdam, 1 cd.
Pitch—
Antwerp, 287 t.

GRIMSBY.

Week ending April 9th.

Chemicals *(otherwise undescribed)*
Dieppe, 2 cs. 89 pkgs. 2 drms.
Hamburg, 7 cks. 18 16
Coal Products—
Dieppe, 101 cds.

PRICES CURRENT.

WEDNESDAY, April 27th, 1892

Prepared by Higginbottom and Co., 116, Portland Street, Manchester.

The values stated are f.o.r. *at maker's works, or at usual ports of shipment in U.K. The price in different localities may va*

	£	s.	d.
Acids:—			
Acetic, 25 °/₀ and 40 °/₀ .. .. per cwt.	7/- & 11/-		
,, Glacial .. .. ,,	50/-		
Arsenic, S.G., 2000° .. .. ,,	0	13	6
Fluoric .. .. per lb.	0	0	3¼
Muriatic (Tower Salts), 30° Tw. .. .. ..per bottle	0	0	10
,, (Cylinder), 30° Tw. .. .. ,,	0	3	0
Nitric 80° Tw. .. .. per lb.	0	0	2¼
Nitrous .. .. ,,	0	0	1¾
Oxalic .. .. nett ,,	0	0	3
Phosphoric, 1750° .. .. ,,	0	1	2½
Picric .. .. ,,	0	0	10¼
Sulphuric (fuming 50 °/₀) .. .. per ton	15	10	0
,, (monohydrate) .. .. ,,	5	10	0
,, (Pyrites, 168°) .. .. ,,	3	5	0
,, (,, 150°) .. .. ,,	1	5	0
,, (free from arsenic, 145°) .. .. .. ,,	1	7	6
Sulphurous (solution) .. .. ,,	2	15	0
Tannic (pure) .. .. per lb.	0	1	2
Tartaric .. .. ,,	0	1	1
Arsenic, white powdered .. .. nett per ton	10	17	6
Alum (loose lump) .. .. ,,	5	5	0
Alumina Sulphate (pure) .. .. ,,	5	0	0
,, ,, (medium qualities) .. .. .. ,,	4	15	0
Aluminium .. .. per lb. 2s. 8d. to	0	3	2
Ammonia, ·880=28° .. .. per lb.	0	0	3
,, =24° .. .. ,,	0	0	1¾
,, Carbonate .. .. nett ,,	0	0	3¼
,, Muriate .. .. per ton	21	0	0
,, ,, (sal-ammoniac) 1st & 2nd .. per cwt.	35/- & 33/-		
,, Nitrate .. .. per ton	40	0	0
,, Phosphate .. .. per lb.	0	0	10½
,, Sulphate (grey), London .. .. .. per ton	10	5	0
,, ,, (grey), Hull .. .. ,,	10	3	9
Aniline Oil (pure .. .. per lb.	0	0	7
Aniline Salt ,, ... ,,	0	0	6½
Antimony .. .. per ton	45	10	0
,, (tartar emetic) .. .. per lb.	0	1	0
,, (golden sulphide) .. .. ,,	0	0	10
Barium Chloride .. .. per ton	7	10	0
,, Carbonate (native) .. .. ,,	3	10	0
,, Sulphate (native levigated) .. .. .. ,,	45/- to 75/-		
Bleaching Powder, 35 % .. .. nett ,,	7	10	0
,, Liquor, 7 % .. .. ,,	2	10	0
Bisulphide of Carbon .. .. ,,	11	15	0
Chromium Acetate (crystal .. .. per lb.	0	0	6
Calcium Chloride .. .. per ton	2	5	0
China Clay (at Runcorn) in bulk .. .. .. ,,	17/6 to 35/-		
Coal Tar Dyes:—			
Alizarine (artificial) 20 % .. .. per lb.	0	0	8¼
Magenta .. .. ,,	0	3	9
Coal Tar Products			
Anthracene, 30 % A, f.o.b. London .. per unit per cwt.	0	1	2½
Benzol, 90 % nominal .. .. .. per gallon	0	1	10
,, 50/90 ,, ... ,,	0	1	6
Carbolic Acid (crystallised 40°) .. .. . per lb.	0	0	4⅞
,, (crude 60°) .. .. per gallon	0	1	2
Creosote (ordinary) .. .. ,,	0	0	1
,, (filtered for Lucigen light) .. .. ,,	0	0	2
Crude Naphtha 30 % @ 120° C. .. .. .. ,,	0	0	9
Grease Oils, 22° Tw. .. .. per ton	2	2	0
Pitch, f.o.b. Liverpool or Garston .. .. .. ,,	1	14	0
Solvent Naphtha, 90 % at 160° .. .. .. per gallon	0	0	11
Coke-oven Oils (crude) .. .. ,,	0	0	3
Copper .. .. per ton	46	0	0
,, Sulphate .. .. ,,	15	10	0
,, Oxide (copper scales) .. .. ,,	45	0	0
Glycerine (crude) .. .. ,,	13	0	0
,, (distilled S.G. 1250°) .. .. ,,	45	0	0
Iodine .. .. nett, per oz.	0	0	9
Iron Sulphate (copperas) .. .. per ton	1	12	6
,, Sulphide (antimony slag) .. .. ,,	2	0	0
Lead (sheet) for cash .. .. ,,	12	0	0
,, Litharge Flake (ex ship) .. .. ,,	14	5	0
,, Acetate (white ,,) .. .. ,,	25	10	0
,, ,, (brown ,,) .. .. ,,	17	10	0
,, Carbonate (white lead) pure .. .. .. ,,	20	0	0
Nitrate .. .. ,,	20	5	0
Lime, Acetate (brown) .. .. per ton	5	17	6
,, ,, (grey) .. .. ,,	10	5	0
Magnesium (ribbon and wire) .. .. per oz.	0	2	3
,, Chloride (ex ship) .. .. per ton	2	7	6
,, Carbonate .. .. per cwt.	1	17	6
,, Hydrate .. .. per ton.	17	0	0
,, Sulphate (Epsom Salts) .. .. .. per ton	2	19	0
Manganese, Sulphate .. .. ,,	17	15	0
,, Borate .. .. per cwt.	2	15	0
,, Ore, 70 % .. .. per ton	4	5	0
Methylated Spirit, 61° O.P. .. .. per gallon	0	2	6
Naphtha (Wood), Solvent .. .. ,,	0	4	6
,, ,, Miscible, 60° O.P. .. .. .. ,,	0	4	6
Oils:—			
Cotton-seed .. .. per ton	19	10	0
Linseed .. .. ,,	20	0	0
Lubricating, Scotch, 890°—895° .. .. .. ,,	7	5	0
Petroleum, Russian .. .. per gallon	0	0	4½
,, American .. .. ,,	0	0	5¼
Potassium (metal) .. .. per oz.	0	3	7
,, Bichromate .. .. per lb.	0	0	3½
,, Carbonate, 90% (ex ship) .. .. .. per ton	18	0	0
,, Chlorate .. .. per lb.	0	0	7
,, Cyanide, 98% .. .. ,,	0	2	2
,, Hydrate (Caustic Potash) 80/85 % .. per ton	22	10	0
,, ,, (Caustic Potash) 75/80 % .. ,,	21	0	0
,, ,, (Caustic Potash) 70/75 % .. ,,	20	15	0
,, Nitrate (refined) .. .. per cwt.	1	2	6
,, Permanganate .. .. per cwt.	3	10	0
,, Prussiate Yellow .. .. per lb.	0	0	10½
,, Sulphate, 90 % (ex ship) .. .. .. per ton	9	15	0
,, Muriate, 80 % (do.) .. .. .. ,,	7	17	6
Silver (metal) .. .. per oz.	0	3	3½
,, Nitrate .. .. ,,	0	2	10
Sodium (metal) .. .. per lb.	0	3	4
,, Carb. (refined Soda-ash) 48 % ..nett per ton	6	2	6
,, ,, (Caustic Soda-ash) 48 % . ,, ,,	5	5	0
,, ,, (Carb. Soda-ash) 48% .. .. ,,. ,,	5	7	6
,, ,, (Carb. Soda-ash) 58 % .. .. ,, ,,	6	5	0
,, ,, (Soda Crystals) .. .. .. ,, ,,	3	9	0
,, Acetate (ex-ship) .. .. ,,	16	15	0
,, Arseniate, 45 % .. .. ,,	10	10	0
,, Chlorate .. .. per lb.	0	0	8
,, Borate (Borax) .. .. nett, per ton.	29	10	0
,, Bichromate .. .. per lb.	0	0	2¾
,, Hydrate (77 % Caustic Soda) (f.o.b.) nett pr. ton (10 ton lots)	11	10	0
,, ,, (74 % Caustic Soda) ,, ,, ,, (10 ton lots)	11	10	0
,, ,, (70 % Caustic Soda) ,, ,, ,, (10 ton lots)	10	10	0
,, ,, (60 % Caustic Soda) .. ,, ,, (10 ton lots)	9	7	6
,, ,, (60 % Caustic Soda, cream) (f.o.b.) ,, (10 ton lots)	9	2	6
,, Bicarbonate .. .. ,,	6	12	6
,, Hyposulphite .. .. ,,	7	15	0
,, Manganate, 25% .. .. ,,	11	10	0
,, Nitrate (95 %) ex-ship Liverpool .. ..per cwt.	0	8	10½
,, Nitrite, 98 % .. .. per ton	30	0	0
,, Phosphate .. .. ,,	15	10	0
,, Prussiate .. .. per lb.	0	0	7¾
,, Silicate (glass) .. .. per ton	5	7	0
,, ,, (liquid, 100° Tw.) .. .. .. ,,	4	5	0
,, Stannate, 40 % .. .. per cwt.	3	5	0
,, Sulphate (Salt-cake) .. .. per ton.	1	17	6
,, ,, (Glauber's Salts) .. .. ,,	1	15	6
,, Sulphide .. .. ,,	7	15	0
,, Sulphite .. .. ,,	6	12	6
Strontium Hydrate, 100% .. .. ,,	8	10	0
Sulphocyanide Ammonium, 95 % .. .. per lb.	0	0	7½
,, Barium, 95 % .. .. ,,	0	0	5
,, Potassium .. .. ,,	0	0	7¾
Sulphur (Flowers) .. .. per ton.	10	0	0
,, (Roll Brimstone) .. .. ,,	7	10	0
,, Brimstone: Best Quality (nominal) .. ,,	5	5	0
Superphosphate of Lime (26 %) .. .. ,,	2	7	6
Tallow .. .. ,,	26	10	0
Tin (English Ingots) .. .. ,,	97	0	0
,, Crystals .. .. per lb.	0	0	6¾
Zinc (Spelter) .. .. per ton	22	0	0
,, Chloride (solution, 96° Tw.) .. .. .. ,,	6	10	0

THE

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TENDER.

LEEK IMPROVEMENT ACT, 1855.

TO TAR DISTILLERS AND OTHERS.

DERS are invited for the purchase of the sur-
Gas Tar produced at the Leek Gas Works, for One, Two, or Three
he 1st of July next, 1892, at per ton of 2240 lbs. at such works.
tenders, addressed to the Chairman of the Gas Committee, to be
the Town Hall, Leek, by four o'clock in the afternoon of Monday, 23rd
ant.
Tender and further particulars may be obtained from the undersigned.
st or any tender will not necessarily be accepted.

By order of the Commissioners,
C. HENSHAW, Clerk.

ll, Leek,
6th May, 1892.

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ledge of refining products. State experience and wages required to
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s when prepaid, viz.:—

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Each additional 10 words ..... 0s. 3d. ,,

vertisements, Announcements in the Directory Columns, and all Adver-
s prepaid, are charged at the Tariff rates which will be forwarded on

sements intended for insertion in the current week's issue
ich the office by **Wednesday morning** at the latest.

CURRENT TOPICS.

AN OLD FRIEND IN A NEW GUISE.

EVERY day we find fresh evidence of how history repeats itself, and it truly seems as if there is nothing new under the sun. Many ingenious and often very elaborate schemes have been suggested with a view to overcoming the great sewage difficulty, and each new one, according to its claims, is more perfect and yet withal simpler than any of its predecessors.

Yet upon closer investigation many of them appear familiar as far as their principle goes, if they differ somewhat in the way in which that principle is put into practice.

Now, we do not see any reason why the fact of the principle being antiquated should be taken as evidence that the process is no good; on the contrary, many of the most successful processes connected with the chemical industries have sprung up from the practical utilization of ideas and facts which have been rendered familiar by the process of time, so that it must not be inferred that the process which is described in the following cutting (appearing in the *Leeds Mercury)* is not capable of producing good results.

We give the paragraph as it stood in the form of a letter, running as follows:—

"The question of the purification of sewage is again brought to the front by resolutions passed by various County Councils, calling upon the Sanitary Authorities to cease polluting our rivers and streams. Owing to the costly and inefficient nature of most methods of purification, no little anxiety will be felt by those authorities as to the best means of attaining that end.

"Numberless are the processes that have from time to time been brought before the public, claiming to have solved the problem; but very few, however, have made any headway, the chief drawback being the great cost of the most efficient, thus preventing their general adoption.

"Space will not allow of a comparative description of all these systems. We therefore wish to give a few facts relating to a method of purifying sewage which is at once effectual and inexpensive. We refer to the 'carbonised refuse system.' Briefly, the process is as follows:—

"The refuse (ashpit) containing animal and vegetable matter is carbonised, and this made into a filtering medium, over which the sewage is passed, and from which it issues a deodorised, decolourised, and pure effluent, and within the standard of purity laid down in the fifth report of the Rivers Pollution Commission.

"This system has some remarkable advantages.

"It utilises to a useful end the refuse of a town, which is now frequently destroyed at a very large cost.

"It solves the perplexing difficulties of disposal of town's refuse and sewage.

"It relieves public authorities from the heavy burden of having to acquire large areas of land for land filtration, or irrigation, only one acre of land per 20,000 of popuiation being required for erection of plant for this process, or one-two-hundredth of the area required for broad irrigation, and one-fortieth of that necessary for combined systems of precipitation and intermittent downward filtration.

"It disposes of the sludge difficulty (which accompanies all systems where chemicals are used as a precipitating agent), as, according to the ordinary acceptation of the word 'sludge,' none is produced by this system, *i.e.*, the solids naturally in the sewage are not increased in bulk by the addition of chemicals.

"It is inexpensive, and has the dual advantage of disposing of the refuse to purify the sewage, one evil abating the other, and thus getting rid of both.

"The process can be seen working at Alton, Hants, and at Halifax."

Without wishing to disparage this process, it seems to us, that the procedure set forth is very closely akin to the proposals made some years back, by a firm which styled itself, to the best of our recollection, The Carbon Fertilizing Co., and who made a contract to receive all the ashpit refuse from Oldham, with a view to making a charcoal with the refuse and then filtering the sewage through this charcoal, thus enriching the latter and rendering it of value for manuring purposes.

It is stated above that the process obviates the necessity for purchasing land for filtration, since one acre of land is sufficient area to treat the sewage of a population of 20,000. It is to be hoped that the experiences with this process may be different from those at Oldham.

In that case, it was found that the ashpit refuse was accumulating rather too rapidly for the requirements of the Company, yet the Corporation insisted on the refuse being taken according to the contract. After a while an injunction was obtained to restrain the Company from storing this heap of refuse, which had assumed mammoth proportions by this time, on account of the objectionable smell which it created. The final resource adopted to get out of this difficulty, was to bury the excess refuse in a deep hole on land obtained for this purpose, and asphalte it over, a rather dismal ending to the Company's prospects.

THE USE OF EXPLOSIVES IN MINES.

We have already referred to this matter in these columns, and the correspondence which appeared upon the matter we should have thought would have satisfied all enquirers. It appears, however, that notice has been given that the Presidents of the Board of Trade will shortly be asked what steps it is intended to take to prevent the use of poisonous explosives in mines. Oh! learned pedagogue and doughty champion of the slaves of the black diamond who thus enquires, what a pity you do not read current literature and learn first if the explosives used really are poisonous.

The researches of Professor Bedson should speedily remove any doubts; but, alas! a subject once raised, although answered at the time, takes a long while dying, being continually dragged forth to be discussed, heckled over, twisted and warped to suit different arguments, so that ultimately where a simple statement of fact might have left the matter satisfactorily explained, continual harping leads to misunderstanding, leaving the question at the finish in a state of

"Ruin upon ruin, rout on rout,"
"And confusion worse confounded."

THE MERSEY AND IRWELL JOINT COMMITTEE.

THE members of the Mersey and Irwell Committee, on Monday last, paid a visit to and made an inspection of the sewage works now in course of construction by the Manchester Corporation.

In the afternoon, a meeting for the transaction of general business was held in one of the committee-rooms at the Town Hall. Mr. J. T. Hibbert, chairman of the committee, presided.

The Chief Inspector (Mr. R. A. Tatton) submitted his report, in which particulars were given with regard to the position of the various local authorities with regard to sewage. These particulars completed the reports and put the Committee in possession of information about all the authorities in the watershed, numbering 84 in all. On analysing these returns the Inspector said it was impossible not to be struck with the fact that, speaking generally, the smaller authorities had done much more in the direction of sewage purification than the larger ones. The rural sanitary authorities had in most cases provided for the requirements of the population or were now doing so, and about one-third of the urban authorities were in a similar position; but from the only one-fourth of the sewage was treated, and only three of t teen boroughs had works in operation. Taking the popula consideration, he estimated that the remaining fourteen borou responsible for two-thirds of the present sewage pollution, and rivers would be benefited to that extent when they had all ca works for sewage treatment. During the past week he had Barwise, medical officer of health for the Derbyshire County and with him inspected the upper waters of Etherow. The D County Council were taking up the question of rivers pollution ventured to suggest that a communication from the Committ strengthen their hands in dealing with local authorities. Th still traces of refuse and cinder tipping on both the Goyt Etherow, which should be made the subject of remonstrance, sewage was turned untreated into the river. The efforts w Committee were making lower down the river to induce the a to improve the present state of things should be sufficient re expecting those outside the district but who drained into it t same. Complaints had been made during the past month aga authorities and private firms for allowing cinders and refuse to the rivers.

The Chairman, in moving the adoption of the report, said h the inspector's statement with regard to the rural sanitary a was very satisfactory. Considering that the rural sanitary a had the least rateable value to depend upon, it was surprisin that they had more fully carried out their duties than any othe authorities Of course, in these cases the works had not bee tensive and perhaps not so difficult, yet from his knowledge of of rural sanitary authorities he knew it was very difficult in so to provide for sewage purification. With regard to the boro felt sure they all regretted to find that so few of them had sew in operation; but after the notice they had given to the vari authorities, and when it was known that they were going to this question impartially and without any fear or trembling, h that before another year was over they would find that the occupied a different position from what they occupied at the pre But he would like to say publicly that the provision of sewag was not everthing. People might provide beautiful sewage w yet not provide settling tanks or proper provision for dealing sewage at the outfall. There were three things that must be One was to prevail on the authorities to have proper sewers, t was to see that proper outfall works were provided, and the to see that the works were carried on in a satisfactory way. hear.) He felt impelled to say that, in view of the inspection made of the outfall works of the Manchester Corporation, he much impressed with what he had seen. The Corporation of city of Manchester had been a long time in making any effort their sewage out of the river, but now they appeared to be t alive to the importance of dealing with the matter in a satisfac The works were magnificent, and they were provided with 12 acres of land to deal with the sewage after it had left the settli And when Manchester had dealt with its sewage in a sa manner it would have a right to expect that all the authoriti Manchester in the watershed should be compelled to do th He had nothing more to say on the report, except that he thou acting on the inspector's suggestion, they should send a stro sentation to the Derbyshire County Council, and that they sh send a representation to the West Riding Council. These a it would be remembered, gave the assurance that they were to deal with the sewage in their own districts, and that was consented to omit the districts from the area covered by the Co

Mr. J. P. Haslam seconded the Chairman's motion.

Dr. Hewitt, emphasising the Chairman's remarks, sai important to see not only that the authorities had works, bu works were worked. Too often the sewage was allowed to works as bad as when it came in.

The motion was adopted.

The Committee then received a deputation from the M Corporation.

The Chairman said the Committee would be glad to hear deputation had to say as to why proceedings should not be tak the Corporation in respect of their failure to deal with their se

Mr. William Carr, chairman of the Sanitary Committe Corporation, said that Committee intended to deal with this soon as they possibly could, but on receiving the notice from Committee they paused in order to see what steps the Joint C thought it advisable for the Corporation to take. There v disposition on the part of the Corporation to do what was and it must not be imagined that they had been standing stil had not been that energy in the matter that there ought to —(laughter),—but at the same time they had not been stan Plans had been prepared for some time, but their great diffi the acquisition of suitable land.

Chairman said they could not undertake to advise the Corpora- to the best method for them to adopt. The position was this. spector reported that at Macclesfield there was no intercepting that nothing was done for the treatment of the sewage, and that drainage went into the river. Well, the Joint Committee were ined to carry out their duties in a thorough manner, and they sist on Macclesfield dealing with its sewage and preventing the n of the river Bollin, and thus avoiding what was a great injury health of the district and a nuisance to everybody.

Mayor of Macclesfield (Councillor Thomas Brough) said it was y true to say that nothing had been done. The Corporation were iously of opinion that something should be done, and the delay curred through a desire to ascertain the best and cheapest means ring out what was desired. Something would be done as soon were agreed as to what was the best method.

Killick quoted from a Macclesfield paper a report of a recent g of the Macclesfield Board of Health, at which Mr. Alderman said, "When the hour has arrived when we can delay no longer, go on with the work"—meaning the sewage works. Several entlemen spoke, and they all, with the exception of Mr. Carr, ith the matter in the same tone. This, he said, did not seem to in- any willingness on the part of Macclesfield to undertake the work.

Carr disclaimed responsibility for the views of Alderman White. terated that they were desirous of proceeding with the work, but ere not a rich town—that was their misfortune,—and they wished rtain which was the best method before they proceeded to do g.

ply to a renewal of the suggestion that the Joint Committee should the Corporation as to what they should do, it was stated that the ittee could not take upon themselves the responsibility of giving vice. All they had to do was to see that the law was carried out. further discussion the Chairman said he would recommend the ittee to accept the assurance that the Macclesfield Corporation intend to play with the question. He recommended the Com- not to take proceedings for three months, and in the meantime cclesfield Corporation would have an opportunity of putting oulder to the wheel and showing what they were disposed to do matter.

suggestion was agreed to.

deputation thanked the Committee for their courtesy and retired.

Clerk (Mr. F. C. Hulton) read a letter in the following terms Ir. J. Haslam, Town Clerk of Bury:—

letter of the 5th inst. has received the careful consideration of mmittee, and I am directed to reply that under all the circum- of the case, and especially having regard to the position taken his borough on the application to Parliament of your Joint Com- for additional powers in reference to the streams in the above hed, my Committee cannot see that any useful purpose could be by a meeting such as the one referred to in your letter. My ittee are further of opinion that Mr. Alderman Maxwell, the ntative of this borough on the Joint Committee, can explain the of this corporation in reference to this subject quite as well as be done by any deputation that might be appointed.

Alderman Maxwell, in answer to an invitation from the chair, led the meeting that Bury was one of the prime movers with to the institution of the Joint Committee. They had also taken steps with regard to their own sewage, including the purchase ; but neither the Town Council nor the inhabitants could see ay to take further action until Parliament had been induced to he incidence of taxation so that the ground owners should con- their proper quota towards the work of preventing the pollution river. It was intended to oppose the granting of the additional sought by the Joint Committee until the incidence of taxation en altered as desired.

Groves said the Salford Corporation had had more trouble in with Bury than with any other town in the watershed. He the Committee would be firm.

Maxwell said he objected to the statement that Bury was the sinner. It had done more than any other town except Bolton. ad done nothing in reply to Salford's remonstrances, because jected to be harassed by Salford, which was the greatest sinner ghter),—but they were prepared to listen to the Joint Committee.

V. K. Armitage said that Salford, instead of being the chief had stood in the forefront in this matter. Nothing could be than the excuse of Bury, that they objected to obey one law until r law had been altered. He was favourable to the contention of with regard to the alteration of the incidence of taxation, but were wait until that question had been forced through a House of rds—the House of Lords—before the sewage question could be with? That question could only be settled after a general elec- hich turned chiefly upon it, and if they were to wait till then ould wait until they were all poisoned. (Hear, hear.)

Chairman said he quite agreed that the position taken up by was an impossible one. At the same time he did not wish to do anything harsh or precipitate. The notice they had given to the Bury Corporation would not expire till the 12th or 13th of May, and it would take some time to prepare their action against the Corporation. He suggested that they should postpone their decision until the next meeting of the Committee, and that would give the Corporation, if they so desired, an opportunity of appearing before the Parliamentary Committee in London, if the Committee should meet before then.

Mr. Maxwell said that, in view of the speeches that had been made, the Council would no doubt, before the next meeting of the Committee, either decide to go on with the works or stupidly decide to do nothing. (Laughter.)

The suggestion of the Chairman was adopted.

A letter was read from the Foreign Office stating that they would be glad to obtain for the Committee the information desired by them with regard to the law and practice of foreign States with regard to the prevention of the pollution of rivers.

There was no other business before the meeting.

ON THE DECOMPOSITION OF SODIUM NITRATE AND THE DISTILLATION OF NITRIC ACID.

By Dr. C. W. Volney.

WHEN distilling nitric acid from the usual mixture of sodium nitrate and sulphuric acid, it is frequently observed that at certain periods a violent reaction sets in, and that the contents of the retort are carried over into the receivers. The general supposition is that its cause is overheating, and to prevent it, the distillation is carried on at a low temperature, and the retorts are made of such capacity that the foaming may spend itself without reaching the conducting tube and running over.

However, it can be observed that the foaming of the retort contents occurs at certain periods of the continuation of the process, even when only a very moderate heat is applied, and is therefore dependent not merely upon its external application; and as it does appear that the distilling acid has a close connection with the reaction taking place in the retort, in relation to boiling point and constitution, a consideration of the qualities of nitric acid of different concentrations will serve in the explanation of these different reactions, especially during the distillation of the acid from the mixture of sodium nitrate and sulphuric acid.

A. Smith* found that a nitric acid of the constant boiling point 81·56°C had a specific gravity of 1·503—1·51, and was the first hydrate, NO_6HO or HNO_3; also that an acid, boiling constantly at 121°, had the specific gravity 1·41 and was the second hydrate, $NO_5 2HO$ or $N_2O_5 2H_2O$.

Roscoe† states, that by boiling nitric acid of any concentration, a residue of constant specific gravity 1·41 and boiling point 120·5° remains; this seems to correspond with Smith's second hydrate.

The existence of definite hydrates of nitric acid has been questioned frequently, but the corresponding boiling points and specific gravities, as well as some reactions in the decomposition of nitrates in presence of water, and the fact that not only anhydrous nitric acid, but also the hydrates, when brought in contact with water, develop heat, cannot very well be explained except upon the theory that several chemical combinations with water exist Discrepancies in boiling points as well as in specific gravities are always likely to exist, also the first and second hydrates are constantly decomposing, especially under the influence of light, and this cannot therefore be held as a valid objection to the theory of distinct hydrates. In the preparation and manufacture of nitric acid the processes and reactions can best be explained by the acceptance of the several hydrates of nitric acid, and the following table of observations furnishes a direct proof of it.

It was decided to conduct the experiments with, comparatively speaking, large quantities, and as there were facilities for obtaining strong acid for the preparation of nitro-compounds and organic nitrates the author had occasion to repeat his observations. The table thereof, which is given here, refers to the distillation of the acid from a mixture of 2500grms. sodium nitrate, and 2600grms. of commercial sulphuric acid of 1·837 specific gravity at 67° F. The tubulated glass retort had a capacity of about two gallons, was provided with a thermometer in the tubulus and heated in a paraffin bath, the temperature of which could also be ascertained by thermometer. The bulb of the inside thermometer did not reach the mixture in the retort and indicated the temperature of the distilling vapours. The condensation was effected by a Liebig's condenser, whereby an exchange of receivers was rendered easy.

It was noted during the distillation, the time, the temperature, as indicated by the in and outside thermometer, and the quantities of acid received in different periods, the reactions of the contents of the retort were also observed. These notes are contained in the following:—

*A. Smith, *Phil. Magazine* (3) 31, p. 454.
†Roscoe, *Jahresbericht* 1860, p. 65.

Time.	Temperature. Outside.	Inside.	Remarks.
A.M. 10-10	83°	45°	Reaction commences.
11-30	85°	47°	Gas forming, mass caking.
11-45	90°	50°	,, ,,
	94°	52°	,, ,,
11-45	97°	55°	,, ,,
	102°	58°	,, ,,
11-53	106°	65°	Red vapours appear.
	110°	70°	The red vapours lessen.
	118°	75°	Disappear, white fumes.
	120°	77°	Salt in retort melts, acid vapours distil over.
Noon. 12-0	122°	80°	Mass is foaming, nitrate dissolves rapidly, nitric acid distils well.
P.M. 12-10	122°	81°	Contents of retort are foaming strongly, acid distils rapidly.
12-15	122°	81°	Foaming, contents have risen two inches.
12-16	122°	81°	Foaming, contents have risen two inches.
12-16	122°	81°	The fire lessened to prevent running over.
12-20	120°	80°	Acid distils rapidly and quietly.
	118°	80°	Danger of running over is past.
	115°	81°	Distils well and quietly, I increase fire.
12-30	117°	88°	Distils well, foaming commences again.
12-47	118°	88°	Distils well, foaming commences again
1-0	120°	90°	Distilling and foaming.
1-10	122°	90°	Distils more slowly, foaming increases.
1-37	125°	90°	Distils less, but foams strongly.
1-45	130°	90°	I increase the fire.
2-0	130°	90°	Foaming, keep up a brisk fire and and change the receivers.
2-10	131°	90°	Foaming, commences to distil again.
2-20	131°	90°	Distillation ceases, foaming.
2-45	130°	94°	,, ,, ,,
2-50	130°	97°	No distillation.
3-0	135°	100°	
3-10	138°	100°	Commences to distil.
3-20	138°	100°	,, ,,
3-25	138°	101°	Increase firing.
3-30	138°	101°	Little distillation.
3-36	139°	103°	Distilling.
	141°	104°	,,
3-40	142°	105°	,,
3-45	142°	105°	Liquid in retort is boiling and foaming.
	143°	106°	and distilling.
	144°	108°	Distils slowly; the condenser is cooling; increase the fire.
3-53	144°	108½°	It distils again.
4-05	146°	107°	Keep up fire well.
4-15	146°	108°	Foaming and distilling well.
	146°	109°	Liquid is boiling and distilling well.
	147°	109°	It lessens and red vapours appear.
4-20	148°	109°	Distillation lessens; increase the fire again.
4-25	150°	110°	Distillation ceases entirely: condensing tube cools down; change receivers and increase the fire still more.
4-30	151°	110°	No distillation.
4-35	153°	112°	No distillation; foaming a little.
4-40	155°	113°	,, ,,
4-50	160°	115°	Liquid in retort shows signs of boiling.
5-00	163°	117°	Foaming and distilling a little.
5-10	163°	118°	,, ,,
5-15	164°	119°	Liquid boils and distils.
5-20	165°	119°	,, ,,
5-25	164°	120°	Distils well.
5-30	165°	121°	Distils well.
5-35	166°	122°	Distils well; red vapours appear; distillation lessens; increase fire.
5-45	166°	121°	Little distillation; red vapours lessen; condensing tube cools.
5-55	167°	122°	No distillation; tube cools; extinguish fire.

It will be seen that as the periods of this distillation changed, the receivers were changed, thus obtaining three different products, which were weighed and examined.

The first fraction received between 77°-99°, 960g. of 1·5193 sp. gr. at 60° F., almost white. The second fraction, 565 grms. of 1·505 sp. gr. and received between 94° and 109°, was nearly white and but slightly yellow. The third portion, which had distilled between 117° and 122°, was light yellow, weighed 316 grms., and had a sp. gr. of 1·42.

The first two portions mixed gave 1525 grms. of 1.510 sp. gr., which corresponds with the first hydrate usually produced. The author has not succeeded in obtaining an acid of over 1·52, and even this had always more or less NO_2 absorbed. He considered this product, therefore, as the yield of first hydrate. As shown in the foregoing notes, this whole product is received between 84° and 109°; it marks at the latter temperature the point where the greatest portion of the acid of the lower boiling point has distilled at the moment of being set free by the decomposition of the nitrate in the retort. This acid should all have gone over at 84°, but below the 109° there are always portions of the sodium nitrate still left undecomposed, and whenever such portions are becoming heated to the point of dissociation they dissolve in the contents of the retort, the foaming spoken of appears and a portion of first hydrate sets in, whereas acid containing more water and of a higher boiling point remains in the retort and only small portions of which are carried over with the vapours of the first hydrate. This may explain the occurrence of the second fraction, which ceased to go over at 109°. At this temperature all sodium nitrate in the retort is decomposed, and the retort contents now consist only of sodium bisulphate and trisulphate and nitric acid of the second hydrate, or of acid which boils at 120°—121° and can be distilled over at this temperature. After this, there is still left always a little nitric acid in the retort, which can be distilled only at a higher temperature, and is thereby very considerably decomposed. The acids which may now be obtained contain a weaker nitric acid which has absorbed sometimes considerable dioxyde, colouring it red and giving it a high specific gravity.

From the foregoing observations it would seem that sodium nitrate is not fully decomposed by sulphuric acid at a low temperature, but only under application of heat, that the first hydrate distils always shortly after being set free, and that the temperature of the mixture remains stationary as long as only this acid is formed. Whenever the decomposing temperature of the nitrate is reached the first hydrate is suddenly liberated, and thereby causes the foaming in the retort. At the same time the nitric acid which, in the retort, has occasion to form the second hydrate, remains until the sodium nitrate is entirely decomposed, from which period on a second hydrate and weaker acid of a higher boiling point distils, there being now in the retort only the different sulphates of sodium and nitric acid.

The foregoing also tends to explain why it takes so long to effect the apparently simple decomposition and distillation, and why a strong fire is useless and even injurious to quality and yield of acid. A strong fire will invariably overheat the retort and decompose large quantities of nitric acid, especially the first hydrate. On the other hand, the nitrates could not be decomposed by mixing with sulphuric acid, nor the first hydrate be produced therefrom by a simple distillation, because at the temperature at which the nitrate is decomposed the first hydrate boils and thus keeps the temperature of the retort nearly stationary until it is distilled off and the acids of a higher boiling point appear.—*Jour. Am. Chem. Soc.*

THE POSITION OF COPPER SULPHATE.

SULPHATE of copper, which it will be remembered, was held at Bordeaux in large quantities at the end of 1890, resulted in great loss to the holders by the falling prices which took place in consequence. The general demand for sulphate of copper is increasing in the district, where it is now much used in the form of the "bouillie bordelaise." A large proportion of the imports in 1891 again came from the United Kingdom, but a considerable quantity also arrived from the United States of America, and some from Germany. The French sulphate of copper industry has, it appears, been unable to keep up with foreign competition, and has greatly fallen off. As the rates of Customs duty hitherto charged on this article have not been increased by the new French Customs tariff (excepting for certain States which are subject to the maximum tariff), it is not likely that the British sulphate of copper manufacturers will now suffer much from French competition. Prices, however, have not been favourable for importers, and little hope is held out of a speedy rise. Sulphate of copper is now employed not only against cryptogamic diseases of the vine, but also, and with equal success, against those affecting tomatoes, potatoes, and other vegetables. It is estimated that the importations of sulphate of copper at Bordeaux last year reached nearly 12,000 tons.

JRIFICATION OF WATER BY FREEZING.

By Wm. P. Mason.

E old notion that water completely purifies itself by freezing has by no means died out, and even after Pruden's able report on the minated condition of much of the public ice supply, we find ted people collecting ice from sources so polluted as to be beyond on unfit to furnish drinking water. A somewhat aggravated of this kind having presented itself, the following experiments ndertaken to outline the relation existing between an ice and the from which it is frozen. The materials employed for experiment nixed with ordinary tap water. The weights given are in grams. o cb.c. of water.

	Total Residue from 100 c.c.	Loss on Ignition. Volatile and Organic Matter.	Inorganic Residue.	Per cent. of the Mineral Matter Originally in the Water yet Remaining in the Ice.	Per cent. of Organic and Volatile Matter of the Water yet Remaining in the Ice.
c. urine diluted to 10 litres	·0285	·0070	·0215		
from same	·0023	·0022	·0001	0·46	31·43
:. urine diluted to 10 litres	·1380	·0469	·0911		
from same	·0389	·0213	·0176	19·32	45·41
urine in 10 litres of water	·0112	·0047	·0065		
from same	·0040	·0018	·0022	33·84	38·21
:. glycerine diluted to ten res	·7951	·7911	·0040		
rom same	·1012	·1005	·0007	17·50	12·70
s. sugar dissolved in 10 res water	·4932	·4860	·0072		
from same	·1373	·1360	·0013	18·05	27·98
:. NaCl in 10 litres water	·5013	0	·5013		
from same	·1449	0	·1449	28·9	
es of water tinted with digo	·0399	·0336	·0063		
from same	·0027	·0027			8·03
es H_2O, with a little egg bumen—*i.e.*, ½ of that in ie egg	·0163	·0119	·0044		
from same	·0038	·0031	·0007	15·91	26·05
:. Na_2CO_3 in 10 litres of ater	·0907	·0038	·0869		
from same	·0180	·0025	·0155	17·83	65·78
:. sugar in 10 litres of water	·1045	·0996	·0049		
from same	·0118	·0100	·0018	36·73	10·04
. oxalic acid in 10 litres of ter	·0129	·0067	·0062		
rom same	·0037	·0022	·0015	24·19	32·82
. glycerine in 10 litres of ter	·0187	·0140	·0047		
rom same	·0028	·0010	·0018	38·30	7·14
ity supply	·0092	·0035	·0057		
rom same	·0010	·0010	trace	0	28·5
rd spring water	·0540	0	·0540		
rom same	·0045	0	·0045	8·3	
from Erie Canal, where blic ice supply is taken	·0112	0033	·0079		
n above locality used for blic supply	·0067	·0025	·0042	53·2	75·7

e sulphuric acid was prepared of a strength = ·3280 gms. per litre. The ice from same when melted retained H_2SO_4 onding to ·0390 gms. per litre. Ice retained 11·89% of the in the water.

the foregoing it will be observed that organic impurity is more han mineral matter to pass into ice, and, inasmuch as the impurity is the more objectionable of the two, the distinction rtant. It will be noticed that the waters containing sewage ne formed ices of the greatest organic percentages.

e fifteen waters containing organic impurity, the percentages of purity retained by the ice varied from 7·14% to 75·75%, with ge of 34·3%; while of the eighteen waters holding mineral r, the ices formed therefrom retained from a trace to 53·20% of purity, with an average of 21·2%.

TY OF CHEMICAL INDUSTRY: *Scottish Section*.—April meet- nounced for Edinburgh on the first Tuesday, did not come off. rs having been forwarded.

Our Book Shelf.

ELEMENTS OF MATERIA MEDICA AND THERAPEUTICS. By C. E. A. Semple, B.A., M.B. 469 p.p. Index. 440 illustrations. London: Longmans, Green & Co, 1892.

This work includes the whole of the remedies given in the *British Pharmacopœia* of 1885, and the appendix of 1890. It is divided into two sections, comprised of inorganic and organic substances. The latter division is by far the larger of the two. In the present day efforts are being made to ensure medical students having a more practical training in chemistry, since it has now a much more important bearing on biology than it used to have. Such being the case, it is lammentable that so many false impressions should be conveyed and perpetuated in a work of this kind. There are many points which indicate careless revision of the proofs. It is not generally known to the manufacturing chemist, or any other for that matter, that sodium thiosulphate "deodorises" iodine. The judicious use of illustrations in a work of this style is of great importance, as they tend to impress the facts put forward on the mind of the student. In the organic section, the illustrations taken all round are good, but in the inorganic the author is to be sympathised with in having had to reproduce such a feeble collection. A good deal of the apparatus depicted is almost obsolete, while the illustrations of a citric acid and vitriol manufactury are almost ludicrous in their antique crudity. The botanical section is also not wholly free from defects.

It is a pity that a book containing as it does much useful information, well compiled, should have been spoiled for want of attention to detail; revised and brought up to date it would be a most useful, helpful work.

LESSONS IN ELEMENTARY CHEMISTRY, Inorganic and Organic. By Sir H. E. Roscoe, LL.D., F.R.S.; 486 pp. Illustrated. London: Macmillan & Co. 6th Edition, 1892.

This admirable text book has now gone through six editions. The necessity of constantly revising and sometimes partly re-writing a text book, if it is to be a really useful and reliable work, is ever increasing, and in this case the more important discoveries of the last six years have been introduced into the book in such a way as to still enable the work to keep within its original limits, so that users of this well-known text book will find that in it they still have as good a friend as they had in its first edition in 1866.

SILK DYEING, PRINTING AND FINISHING. By G. H. Hurst, F.C.S.; 220 pp. Index, with numerous coloured patterns. London: George Bell & Sons, 1892.

This book is really a collaboration of a series of articles already published in "The Dyer and Calico Printer." The articles have been re-written, and chapters on the printing and finishing of silks added.

The first five chapters treat of the origin and structure of silks, and the dyeing of the same with various blacks and fancy colours.

Chapters six and seven are devoted to a short but useful description of the processes and machinery employed in printing and finishing silk.

Chapter eight considers the testing of raw and dyed silks, and is not only an interesting, but a most useful chapter, including a series of tests for ascertaining how and with what dye-stuffs any particular silk has been dyed.

The book is a practical one, and is evidently written for the use of practical dyers, amongst whom it ought to find a ready sale, as it should constitute one of the works to be found in every dyer's testing room.

An appendix is also attached, which contains a large number of recipes (some 170) all of which can be relied on, so it is stated, to give satisfactory results in actual practice. At the end of the book there is a collection of dyed silks, many of which are interesting, being neatly got up.

PERFUMES AND THEIR PREPARATION, by G. W. Askinson, Dr. Chem. Translated from German by Isidor Furst; 302 pp. 32 engravings, Index. London: E. and F. N. Spon, 1892.

This work comprises a practical account of the various natural and artificial aromatic substances. After a brief history of perfumes the chemical constitution or origin of the chief scent making materials is described. These are divided into three classes, the vegetable, animal, and chemical products employed in perfumery. The extraction of the various essential oils is then practically described, an account being given of the various methods adopted, such as pressure, distillation, absorption, and extraction. A most useful conclusion to this chapter is a long table of names by which the principal essential oils, numbering some 250, are known, the name of the plants from which they are obtained, and the mean yield per 100 parts, a most valuable table to the practical perfumer. Another table of much practical value will be found

under the description of the artificial flavourings made from butyric ether, valerianate of ethyl, &c., which gives the proportions in which these ethers are to be mixed in order to produce almost every required fruit essence, from a pear to a pine apple. The remainder of the book is devoted to an exhaustive collection of receipts for the preparation of all kinds of perfumes, bouquets, smelling salts, fumigators, hygenic perfumes, and cosmetics for the skin, hair, hands, and face. The work concludes with a description of the most suitable articles to be employed for the toilet, some useful hints being given on the selection, bleaching, and cleansing of sponges. The book is well arranged, printed in a bold, clean type, the engravings being well executed. The work is thoroughly practical and should find a ready sale amongst manufacturers of perfumery and druggists.

Laboratory Practice. By J. P. Cooke, LL.D.; 192 pp. London:—Kegan, Paul, Trench, Trübner and Co., Limited., 1892.

The object of this book is to inculcate an inductive method of working, so that students will learn to draw correct deductions from experiments instead of merely performing them in a desultory and unobservant fashion

The arrangement of the book is good, and is of a practical nature throughout. The interpolation of questions is judiciously carried out, it being distinctly stated at the outset that the book is intended to be supplemented by the guidance of a teacher, who, of course would be able to answer the questions should the student be unable to fathom them. The experiments descriptive of the principal characteristics of the various compounds selected are more of a physical than a chemical nature, till chlorine is reached. There are one or two points which are incongruous. The student is warned that chlorine gas is very objectionable, it being stated that "the smallest puff if inhaled may produce serious results," so that there is very little danger of a student inhaling much of this gas. For all that in testing Epsom salts the student is advised to try and recognise the salt by its taste, while the same tests are recommended with zinc sulphate without any precaution being mentioned as to tasting this distinctly poisonous salt. The nomenclature is perhaps the weakest point in the book. Why carbon dioxide should be called carbonic dioxide, and sulphur trioxide, sulphuric oxide we cannot see, the use of the "ic" termination being now in general disuse with one or two exceptions. Chapters three and six are about the two best in the book, the latter being on thermal relations.

The chief feature about the work is the effort to cultivate the reasoning faculties of students, and it certainly will achieve its object in the hands of *bonâ fide* students working under a good instructor. It is certainly a welcome change from the majority of laboratory text books.

Legal Intelligence.

QUEEN'S BENCH DIVISION.

(*Before Mr. Justice Lawrence and Special Jury.*)

BELLITE EXPLOSIVES CO LTD., *v.* CUNLIFFE.

In this case which came on for hearing on Friday, 29th, ult., the defendant, Mr. Brooke Cunliffe, was a shareholder in the Bellite Company. After the company was formed some attacks on it appeared in some of the financial papers alleging fraud, and then Mr. Cunliffe and some other shareholders objected to paying the calls on their shares. A compromise, however, was arrived at, and it was agreed that Mr. Cunliffe should pay up his call and that the defendants should forego the interest due on the calls. When, however, the time came for the payment of the money, Mr. Cunliffe refused, and contended that he was only induced to agree to the compromise by fraud. The Bellite Company then brought this action against him to recover the money due which he had agreed to pay. In opening the case Mr. Fletcher Moulton explained the nature of the explosive. It was claimed for bellite that in its strength it did not differ from dynamite, that, in fact, bellite and dynamite were of about the same strength, but that in the manufacture and in use it was much safer. It had been used, Mr. Moulton said, in the construction of the Manchester Ship Canal to the extent of 25 tons. His Lordship hoped they were not to have any experiments in court. (Laughter.) Mr. Moulton said he should be delighted to let the jury try it.

Evidence having been called in support of the case for the company, Mr. Atkinson, for the defence, contended that the statement in the prospectuses were untrue and that bellite was more expensive than dynamite and not so safe in use as it was said to be.

Mr Cunliffe having been examined in support of his case, counsel were addressing the court when the jury sent to the judge an intimation that they had made up their minds. They gave a verdict for plaintiffs, and hi Lordship gave judgement with costs.

Reports of Companies.

MESSRS. J. H. DEVRIENT AND CO.

The report of the chemical works of Messrs. J. H. Devrient's Joint Stock Co., Germany, states that the decrease in the trade of the company, which began to be noticeable during the closing months of 1890, has been kept up throughout the past year, in fact it has become larger still. The different branches which come under consideration as being the customers for the products of the above-mentioned factory, have expressed much smaller demand than in former years; the reason given for which being the general depression in trade. Towards the end of 1890 the company were compelled to pay higher prices for spirit, without being able to make a corresponding rise in the price of the manufactured article, namely sugar of lead. Only at the end of last year was it found possible to form a union of the manufacturers producing sugar of lead; the consequence of which is that the production is now limited, prices are firmer, and the work is being carried on without loss. The increased entrance duty on colours from Russia made an extension of the business in this department quite impossible, chemicals for the textile branches of industry were only required in very small quantities on account of the stagnation in this business. Under these circumstances it was not possible to declare a dividend for the past year since the gross profits were not sufficient, that is to say if the other funds were to be tended in the usual manner. The new boilers which have been working since last June, have effected a great economy in the consumption of coal, so that the expenses for 1892 should be much smaller; the other costs of manufacture will also be reduced as much as possible. For the year 1891, there was a loss of 24,247·39 mks., after the sum of 33,698·81 mks. had been carried forward.

THE NORTHWICH SALT COMPANY, LIMITED.

The affairs of this company, which was promoted in February, 1889, to acquire 27 acres of freehold land adjacent to Lostock Graham, Cheshire, with the salt deposits and other minerals underlying, and to erect thereon works for raising and manufacturing salt and other products, came before Mr. Registrar Giffard last week, at the London Bankruptcy Court, it being set down in the list for the public examination of the directors and others interested in the promotion and business transactions of the company. The purchase price of the property was agreed at £84,000., and the nominal capital was fixed at £100,000. It was subsequently found necessary to create £20,000. worth of debentures, and owing to inability to meet the interest due thereon, to lack of capital, and to the action of the Northwich Local Board in obtaining an injunction restraining the company from carrying on its business owing to the alleged pollution of a brook which passed through the property, the company became insolvent. A receiver was appointed on behalf of the debenture holders last August, and the following day a winding-up order was made against the company upon the petition of a creditor. Accounts were subsequently furnished showing gross liabilities £29,255. 11s. 6d., assets valued at £13,151. 14s. 10d., but nearly wholly absorbed in the claims of the debenture holders, and a total deficiency of £95,068. 16s. 8d. to the contributories. Upon the case being called, Mr. Bowen, on behalf of the Board of Trade explained that Mr. C. J. Stewart, official receiver had been ordered abroad through ill-health, and applied for a short adjournment of the examination. The learned registrar expressed his regret, and hoped that the official receiver would speedily recover and be able to resume his duties. The proceedings were adjourned until the 19th May by consent of all parties.

THE FIRE AT NEWCASTLE.

LAST week a great fire broke out in the Mosley-street premises of Messrs. Mawson and Swan, the well-known chemists and laboratory furnishers, and speedily assumed most dangerous dimensions. As far as can be learned the first intimation of the fire was received about nine o'clock, when some passers by observed smoke coming from the archway to the east of the front shop of Messrs. Mawson and Swan. The flames appeared to have broken out in what is known as the chemical department, which is situated to the rear and east of the shop of Messrs. Mawson and Swan. On running down the archway the men saw the fire had already obtained a serious hold of the building. The basement was lit up with a bright red light, and the flames could be seen rushng upwards and rapidly spreading to the upper floors of the building. About ten o'clock the fire had spread from the back of Messrs. Mawson and Swan's premises to the premises of the North-Eastern Banking Company, Limited, which practically adjoin. The rapidity with which the flames spread was simply bewildering. Immediately several lines of hose were run out, and

excellent force of water the brigadesmen poured copious sup- to the back roof. This, however, had little effect, owing ability of the men to get the nozzles of the lines of hose to to the centre of the building. Soon afterwards, however, the he bank, which is of glass, commenced to crack with the heat, firemen were given a freer hand to combat with the flames in rth-Eastern Banking Company's property. About 10-30 the he bank went in with a tremendous crash, and viewed from an ndow at the back of Grey-street, the whole building presented t scene of destruction. About eleven o'clock the banking is completely demolished, but the strong room, which is solid roughout and lined with iron, proved impregnable, notwith- the intense fierceness of the flames. By steady and con- laying on to the bank premises the firemen worked for a while lling effect. All at once flames were seen making their way the roof of a building to the south-west, almost adjoining the nd running along the roof like cats, three of the brigade men a hose pipe to the spot and prevented the fire spreading to ining property. The corner of the printing works of Messrs. and Swan got hold, and the stock, both in here and the shop g, which is entered from Grey-street, was considerably d by water.

NOTICE.

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Trade Notes.

VALUE OF COTTONSEED MEAL.—Agricultural chemists esti- e nutriment of 100 pounds of cottonseed meal as equal to 318 of corn, or to 767 pounds of wheat bran.

MCKINLEY TARIFF AGAIN.—The Norway Steel and Iron y, Boston, one of the largest concerns of the kind in the United has ceased to do business owing to the high tariff.

COAL TRADE OF JAPAN.—The Japanese coal trade has con- y developed of late years. The exports in 1890 were 644,048 ainst 558,449 in the previous year.

US CASE OF ADULTERATION.—At Beek, last week, John rmer, and his daughter, who regularly attended the market, ed £40., for selling butter adulterated with 94 per cent., of ne.

IFYING PETROLEUM.—Of all the methods of solidifying m the simplest we have heard of, is that of using potato juice, quantity of which gives petroleum the consistency of lard. Hot ill restore it to its original liquid state.

AND LEAD IN BURMAH.—Some officers of the Geological Department, who recently accompanied the British military in the districts north of Bhamo, are reported to have found deposits of gold and lead in those regions.

K DEARER THAN FUEL.—In Balakany, near Baku, the centre ussian petroleum industry, a strange anomaly exists in the water used for the steam boilers in the several establishments costing more than the fuel. As a matter of fact, the water is bad and dear, costing about half-a-crown per ton; whilst a ton of astatki, that is, the residue from the distillation of the crude naphtha, which is the combustible naturally utilised, is sold at a price equivalent to 1s.6d. per ton of coal.

THE EFFECT OF PROTECTIVE TARIFFS.—It is stated that the leading merchants of Paris are at the present time discussing the best means of protesting against the Protectionist Customs tariffs, which are ruining them. It is proposed that three delegates should go to the President of the Republic, to the President of the Council of Ministers, to the Presidents of the Senate and Chamber, and to the Minister of Commerce to demand a relaxation of the severity of the Customs tariffs, which if not modified would in the near future bring about the ruin of French commerce and of a great many industries.

A DANGEROUS PRACTICE.—Many people consider that fatal accidents should always meet with the entire sympathy of the public, irregardless of how far the accident was the result of culpable negligence. Recently, a youth working with his father as a dyer and cleaner, adopted the speedy but doubtful method of clearing a copper flue by throwing some gunpowder into it. Some five gallons of benzine were lying open on the premises, which, owing to the explosion of the gunpowder, caught light and set the place on fire, burning the youth to death. If people court death in this way no amount of protective legislation will secure the safety of the public.

DOES ALUMINIUM CORRODE?—Anent the adoption of aluminium vessels for the German army, it is said that it is too easily attacked by foods and drink, or surgical antiseptics, to be suitable for field flasks or surgical instruments. Professor Lunge, however, asserts that he has found the action after six days exposure to red and white wines, 1 to 5 per cent. solutions of tartaric, citric, acetic, and carbolic acids, 4 per cent. boric and salicylic acid, beer and tea, to be unappreciable. This difference is probably accounted for by Professor Lunge using sheet aluminium instead of foil, which brings the conditions nearer to those obtaining in practice.

A NOVEL ADVERTISEMENT.—Advertising wheezes are as diversified as the colours of the rainbow. A Manchester man has, however, struck a new line by advertising on matches. The match is of the usual form and size, but by means of a novel process each individual match has printed upon it any advertisement that may be desired. The act of lighting the match necessarily brings into prominence the printed words, and it certainly forms a cheap and "striking" device for securing publicity. A company is working the patent, and supplied all the matches used at the London Naval Exhibition last year. Contracts are also being entered into for the forthcoming Old America Exhibition at Old Trafford.

THE BRESLAU UNITED OIL WORKS.—The returns of this company during the year 1891 have been by no means so satisfactory as in the preceding year, and the profits being much below the average. Although the Breslau factories have turned their attention to the manufacture of nut and linseed oil, and introduced a fresh system of presses, in order that they may be more independent of the home rape harvest, yet the products of this harvest still form the principal raw article worked up in the factory. The new press system is, however, expected to effect great alterations during the current year, in that production will be thereby made very much cheaper; at the same time the shareholders will have to be content with a much smaller interest for the present. Under these conditions the company will not be able to declare a dividend of more than 4 per cent.

EXPORTS AND IMPORTS FOR MARCH.—The returns for the past month are of an unsatisfactory character. The following is a comparison of the exports and imports of certain articles during the past month with the same month last year:—

IMPORTS OF FOREIGN AND COLONIAL MERCHANDISE.

			Quantities. 1891.	1892.
Margarine	cwts.	..	123,203	125,195
Copper ore and regulus	tons.	..	12,599	17,180
Hides—dry and wet	cwts.	..	85,918	79,795
Jute	tons.	..	28,006	9,067
Nitrate of sodium	cwts.	..	231,035	219,885
Tallow and stearine	,,	..	135,260	94,548

EXPORTS OF BRITISH AND IRISH MANUFACTURES.

			Quantities. 1891.	1892.
Alkali	cwts.	..	532,988	527,859
Cement	tons.	..	65,664	41,194
Copper—all kinds	cwts.	..	134,252	140,627
Iron and steel	tons.	..	256,439	218,980
Jute yarn	lbs.	..	2,693,000	1,876,800
Chemical manures	tons.	..	35,136	35,517
Oils—seed	,,	..	7,968	7,703
Salt	,,	..	48,437	50,181

THE QUALITY OF LEEDS GAS.

THE following is taken from the report of Mr. T. Fairley, the gas examiner, who states that during the period from March 14th to April 14th, 1892: "The proportion of total sulphur contained in the Leeds gas has averaged 15·40 grains per 100 cubic feet. The following are the results of tests made at the works in grains per 100 cubic feet:—

Place.	Dates when Tests were made.		Total Sulphur.	Ammonia	Carbonic Acid.	
	March, 1892.	April, 1892.			Weight.	Volume.
Meadow Lane	16. 24. 31.	7. 12.	15·18	0·50	48·90	0·06
New Wortley	17. 21.	1. 8 13.	16·24	1·88	48·90	0·06
York Street	18. 25. 31.	8. 11.	13·99	0·88	40·75	0·05
Average at Works	..	..	15·40	1·14	48·90	0·06
Average at East Parade	..	..	13·50	2·05	48·90	0·06

During the month the average illuminating power of the Leeds gas, tested at 16, East Parade, has been in standard candles (burning 120 grains of sperm per hour):—Standard argand, 24-hole, 18·8; standard batswing, 19·7; Sugg's illuminating power meter, 18·9."

Market Reports.

TAR AND AMMONIA PRODUCTS.

The benzol market continued its downward course, and 90's are to-day only worth 1s. 7d. and 50/90's 1s. 3d., having thus touched figures already reached in 1885. Solvent naphtha is weak. Crude carbolic as well as the crystal product being in such an unsatisfactory position that many makers prefer to leave the carbolic in the light oil rather than attempt to extract it. Yet at the same time the old fashioned processes are still in use for its recovery, no attempt being made by the producers to cheapen production: Creosote is now very low, and prices between ½d. and ¼d. per gallon have been accepted. There is no business doing in anthracene, but the prices remain nominally, 11d. and 1s. for 30% A and 7d. and 8d. for 30% B. Pitch may be quoted at about 24s. at all ports.

The sulphate of ammonia market continues very dull, and there is an utter absence of business. There is no doubt that makers are very much concerned by the failure of Messrs. Page and Company, although we do not think that any large producers of sulphate are concerned to any great extent. The failure caused much surprise in commercial circles. The agent of the Gas Light and Coke Company still quoted £10. 2s. 6d., but it is reported that he cannot effect sales at this price. At Hull and Leith parcels are offering at £10. 2s. 6d. without finding buyers. London outside makes have been sold at £10. 2s. 6d. to £10. 3s. 9d. for prompt delivery, but the demand is limited.

LIVERPOOL OIL AND COLOUR MARKET.

LIVERPOOL, Wednesday.

COLOURS without change. Ochres: Oxfordshire, common, £10. medium, £12., best, £15.; Derbyshire, common, 40s., medium, 50s., best, 60s. Welsh, best, 70s., seconds, 50s., and common, 18s.; Irish, Devonshire, 40s. to 45s.; French, J.C., 55s. to 60s.; M.C., 65s. to 67s. 6d. Umber: Turkish quiet. Devonshire, 50s. to 55s. White lead, red lead, and oxide of zinc unchanged. Venetian red, £6. 10s. to £10. Cobalt: Prepared oxide, 10s. 6d.; black, 9s. 9d.; blue, 6s. 6d. Zaffres: No. 1, 3s. 6d.; No. 2, 2s. 6d. Oxide of iron: common, £6.; medium, £10.; finest, £20.

OILS.—The slightly improved condition of palm oil is maintained, there having been a fair amount of business passing in Lagos at £19. 15s., Bonny and Old Calabar at £19. 2s. 6d. In olive there is a slight slackening in price, it now being quoted at £32. 10s. to £38. per tun, according to quality. There has been a little more business done since the reduction. Linseed having declined again to 19s. to 20s. per cwt. in export casks, has been selling steadily during the week, the demand to-day being fairly well maintained. Rape: Further sales of refined Stettin have been made at 26s. per cwt. through the week. Cottonseed: Liverpool refined and American are in good demand at 19s. 6d. per cwt. Castor oil is steadily held with prices for good second Calcutta and first pressure French at 2⅝d. and 2 11/16d. respectively. Tallow is steady, but the demand is limited. Resin: There has been very little doing for some time past in Common at 4s. 3d.; but now the price is reduced to 4s. 1½d. to 4s. 3d. there is a steady busines Spirits of turpentine has run down from 26s. 6d. to 26s. 3d quoted to-day at 26s., at which there does not seem to be mu American and Russian petroleum unaltered.

THE METAL MARKETS.

LONDON, Wednesday.—Pig iron firm; Scotch warra at 41s. cash. Middlesbrough 39s. 2d. cash, and Hematite cash. Copper, quiet. Chili bars, G.O B.'s and G.M.B at £45. 8s. 9d. cash, and £45. 17s. 6d. to £46. 5s. three mor nothing doing: Straits closed at £93. 12s. 6d. to £93. 15s. c £93. 7s. 6d. to £93. 10s. three months. Australian, £93 cash; English ingots, £97. Lead steady: Spanis 10s. English, £10. 15s. to £10. 17s. 6d. Silesian ordinary, £22. 10s. Quicksilver, £6. 15s., first hands, and 6d. second hands. Copper shares flat: Cape, 1 5/16 Copiapo, 2¼ to 2⅜; Libiola, 2⅞ to 3; Mason and Barn 4 3/16; Rio Tinto, 15 9/16 to 15 11/16; Tharsis, 4 5/16 to 4 11/16; Nama to 1¼; Panulcillo 7/16 to 9/16.

WOLVERHAMPTON, Wednesday.—Trade continue Demand greatly within makers' capabilities, and prices very d sustain. Sheets: Singles for galvanising £6. 15s. to £7., and £7. to £7. 5s.; tray sheets of Welsh manufacture £10. 5s., makes £11; steel sheets for trunk making, £10. to £ Common bars, £5. 12s. 6d. to £6.; gas tube strip, £6. De pigs restricted and prices weak; Lincoln, 47s. 6d., stations; shire, 43s. 6d.. delivered; Staffordshire common, 36s. upward

GLASGOW, Wednesday.—Market easier, with moderate Scotch done at 41s. cash, also at 41s. 1½d. one month; buyers at 40s. 11d. cash and 41s 1d. one month, sellers ask 4 Middlesbrough done at 39s. 3d. and 39s. 2½d. cash; clos buyers at 39s. 2d. cash, sellers ask 39s. 3d. Hematite 49s. 3d. cash; closing buyers at 49s. 2½d. cash, sellers more.

REPORT ON MANURE MATERIAL.

There has been a fair amount of business passing, but for pr early delivery, buyers are purchasing less freely as the en manure season approaches. Prices have, however, touched a point, and in phosphatic material has been done for forward sh

Although 8½d. per unit would in some quarters still be acc 75/80% Florida phosphate, several important concerns are hc more money. For hot-air dried Peace River rock 7¼d. per u tinues the nominal value, and 7d. for hot-air dried Carolina Ri There is a moderate business doing in other descriptions, favouring buyers.

For summer shipment a good many cargoes of River Pla have been sold, for United Kingdom and Continent and th States, at £4. 2s. 6d. to £4. 3s. 9d., according to size, an value is £4. 3s. 9d. Low prices preclude business in East In and bone meal; for forward shipment, though, £4. 3s crushed Kurrachee bones and £4. 5s. for Bombay bone me probably be accepted. For Bombay bone meal, shipping or a is nearest value for fair average quality. On spot £4. £4. 7s. 6d., according to quality, is being paid.

Deliveries of nitrate of soda continue to be very heavy, b supplies and anxiety of holders to effect sales keep prices droo spot 8s. 7½d. to 8s. 10½d. for common to refined quality accepted, and as low as 8s. 6d. for off colour. Due cargoes worth over 8s. 3d. to 8s. 4½d., according to size and test, arrivals may be had at 8s. 3d. to 8s.

There is nothing fresh to report in dried blood, Kainit, ar phosphates, and values remain without alteration.

MISCELLANEOUS CHEMICAL MARKE

The position of the market for alkalies is without material The demand for caustic sods in the home trade is still less b could be desired, and in the absence of any special demand, t been no change made in the current quotations, which rema some time past, viz.:—F.o.b. Tyne, 77%, £11. 10s.; f.o b. L 74%, £11. 10s.; 70%, £10. 10s.; 60%, £9. 7s. 6d.; crea £9. 2s. 6d., 10 ton lots. For soda ash the demand is fa generally, and Leblanc makes are steady at 1⅜d. per deg Ammonia alkali, 58%, is selling freely, and all the makers booked with orders for this quality of ash, and realising ful value of 1 5/16d per degree f.o.b. Liverpool. Bleaching po

nains at £7. 10s. nett f.o.r. makers works. Soda crystals without nge. Chlorate of potash, makers' price 7d. per lb, with still some ll resales at 6¼d. Chlorate of soda 8d. Vitriol and muriatic ls move off steadily and there is no alteration in the prices. For bhate of copper the demand is still somewhat irregular, and values ge from £15. to £15. 10s, f.o.b. Sulphate of iron is abundant on spot and prices generally have declined. White powdered arsenic tinues in moderate request, and prices rule from £10. 15s. to £11. at Garston, etc. For sulphur, both Scilian and recovered the prices erally are easier, recovered £5. 2s. 6d. to £5. 5s. is nominal value r., but resales are made below this figure. Borax is firm at 29s. 6d. per cwt. Acetate of lime brown, is reported slightly firmer. y acetate of lime, dearer. White sugar of lead has very small enquiry, price has a lower tendency. Acetate of soda, £16. 10s. per ton . Yellow prussiate of potash is still in fair demand, and quiet at htly easier rates for forward delivery. Spot quotations are 10d. to ¿d. per lb. Bichromates, potash, and soda are firmer with prospect dvance. Potash, caustic, and carbonate, are without change in ie, and demand continues fairly good. Aniline oil and salt, olic acid crystals, and all refined coal tar products are without sign ecovery, owing to the general slackness of demand.

THE LIVERPOOL MINERAL MARKET.

The market this week has been steady. Manganese: There have n more arrivals, but prices continue firm. Borate at 6¼d. per lb.; phate, £21. 10s.; oxalate, 1s. 6d. per lb.; chloride, £15.; bonate, £12. 10s., steady. Magnesite: Raw lump flat. Raw und £6. 10s., and calcined £12. 10s. Bauxite (Irish Hill brand) idy; lump 20s. seconds 16s., and thirds 12. French chalk: Arrivals s week have improved. A steady business has been done at full ires. "Angel White" brand, silvery, 90s. to 92s. 6d.; prime ality, 90s. to 95s.; and superfine, 105s. Barytes: Carbonate scarce, ecially best lump, at 90s. to 95s.; nuts, 70s. to 80s.; whilst finest ite sulphate is steady. "Angel White," No. 1, 70s.; No. 2, 60s. 65s.; No. 3, 45s. Pumice stone steady. Iron ore steady; Bilbao pments unaltered; Irish and Cumberland easy. Santander and nganiferous, there is more doing. Emerystone steady, especially it qualities. No. 1 lump, £5. 10s. to £6.; smalls, £5. to £5. 10s. llers' earth quiet; best lump, 55s.; fine impalpable ground, £7.; Emerald" ground, 80s. Scheelite, wolfram, tungstate of soda, d tungsten metal firm and unchanged. Chrome ore: More doing, ecially for higher grades. Stocks practically nil. Antimony : and metal has improved. Asbestos very firm. Potters' lead ore, alls, £10. 10s. to £11. 10s. Calamine easy. Strontia sulphate lestine) quiet. Limespar unchanged, especially for English manutured; old G.G.B. brand in demand at 50s. (ground). Felspar iet. Fluorspar: Best quality scarce. Ferro-manganese steady, %, £12.; 85%, £13. 15s. Plumbago brisk. Spanish, £5.; best ylon lump at last quotations; Italian and Bohemian, £4. to £12. : ton. "Founders," £5. to £6.; Blackwell's "Mineraline," £10. nch sand, 20s. to 22s. 6d. Ground mica, £45 to £50. China clay idy; common, 18s. 6d.; good medium, 22s. 6d. to 25s.; best, 30s. 35s. (at Runcorn). Bog ore (oxide of iron) steady; finest quality . to 23s.

TYNE CHEMICAL REPORT.

TUESDAY.

Chemicals: A steady business is being done and shipments are likely increase; there is no change to report in prices. Bleaching rder, softs, £7. 11s. 3d. and £7. 12s. 6d. per ton, scarce, hards, 17s. 6d. per ton; caustic soda, 76/77%, £11. 15s. per ton, 70%, 10s. per ton; recovered sulphur, 2 cwt. bags, £5. 5s. per ton; a ash, 48%, £5. 8s. 9d. per ton, 52%, £5. 17s. 9d. per ton, 56%, 6s. 9d. per ton; alkali, 36%, £4. 18s. 6d. per ton; white li, 48%, £6. 10s. per ton, 50%, £6. 15s. 6d. per ton, 52%, £7. ton; hyposulphite of soda, £7. per ton in 5-7 cwt. casks, 15s. per ton in 1 cwt. kegs, both in 10 ton lots; silicate of soda, Tw. £3. per ton, 100° Tw. £4. per ton, 140° Tw. £4. 7s. 6d. ton; soda crystals, in casks, £3. per ton gross weight, in 2 . bags, £3. per ton nett weight; chlorate of potash, 7d. per less 6%; pearl hardening, £3. 10s. per ton; pure white hate of alumina, £4. 10s. per ton; blanc fixe, £7. 10s. per ; chloride of barium, £7. 10s. per ton; nitrate of baryta stals, £19. per ton; nitrate of baryta, ground, £19. 10s. per ton; hide of barium, £7. per ton; carbonate of alumina, £28. 10s. ton; aluminate of soda, £33. 10s. per ton; hydrate of barium, t. per ton.

South Durham salt scarce at 10s. and 10s. 6d. per ton nett f.o.b. s.

Coals: The market is firm so far as Northumberland coals are concerned. Large supplies of Scotch and Yorkshire coals being offered for manufacturing purposes the rates are kept down. It is hoped that the early re-starting of some of the non-associated collieries in Durham, will increase supplies of both coals and coke.

WEST OF SCOTLAND CHEMICALS.

GLASGOW, TUESDAY.

There is as yet, no recovery in sulphate of ammonia here, and sales for May delivery have been done at £10. 2s. 6d., while forward (up to August) has in two or three cases been conceded at the low figure of £10. 3s. 9d.

Dyeing in Scotland is greatly depressed, with a majority of the works only on part time; consequently the demand for certain sorts of dye chemicals is weak, and prices declining.

In paraffins there is no change of price, but the demand is very feeble, especially as regards the solids, scale and wax. Consumers of these have taken a stand, and refuse, as prices at present rule, to call for more than they need at the moment. Contracting fully forward for the whole season is the custom, but in no case this year, has this been conformed with, as yet. A drop by the makers seems unavoidable.

The demand for ordinary chemicals keeps very quiet with no change of price to speak of, except in the case of soda crystals which have fallen to £3., the price six and seven months ago. Nitrate of soda also is slightly down in price. Bichromate of potash is in moderate request at the late reduction. Bichromate of soda unchanged and idle.

Chief prices current are:—Soda crystals, £3., nett Tyne; alum in lump, £5. 10s., nett Glasgow; soda ash, 1⅜d., less 2½%, Tyne; caustic soda, white, 74°, £11. 10s., 70/72°, £10. 10s., 60/62°, £9. 17s. 6d., and cream 60/62°, £9. 5s., all nett Liverpool; bicarbonate of soda, 5 cwt. casks, £6. 15s., and 1 cwt. casks, £7. nett Tyne; refined alkali, 1⅝d., less 2½% Tyne; bleaching powder, £7. 10s. nett Tyne; saltcake, 37s. 6d.; borax, English refined, £29., and boracic acid, £37. 10s., nett Glasgow; bichromate of potash, 3¾d., less 12½% for Scotch and English deliveries (for export 3½d., less 10% f.o.b. Glasgow); bichromate of soda, 2¾d., less 10% for Scotch and English deliveries (for export 2½d., less 10% f.o.b. Glasgow); chlorate of potash, 6¼d., less 5% any port; nitrate of soda, 8s. 7½d. to 8s. 9d.; sulphate of ammonia, £10. 2s. 6d. to £10. 3s. 9d. f.o.b. Leith; salammoniac, first and second white, £35. and £33., less 2½% any port; sulphate of copper, £15., less 5% Liverpool; paraffin scale (hard), 2 15/16d., and soft 2 15/16d. to 3d. per lb.; paraffin wax, 120°, semi-refined, 3⅝d. to 4d.; paraffin spirit (naphtha), 6d. a gallon; paraffin oil (burning) 5d., 5¼d. and 5½d. according to kind, at works, for Scotch buyers (English sales about 1d. lower); ditto (lubricating), 865°, £3. 10s. to £4., 885°, £5. 5s. to £7., and 890/895°, £6. to £8. Week's imports of raw sugar at Greenock, 54,182 bags.

New Companies.

THE SCOTTISH ALUM CO., LIMITED.—Registered in Scotland, with a capital of £10,000., in £10. shares. Object, to purchase or otherwise acquire and undertake all or any part of the trade or business lately carried on by the Glasgow Alum and Ammonia Co., at Nitshill, Renfrewshire.

BOOT'S, LIMITED.—This company was registered on the 25th ult., with a capital of £100,000., in £1. shares, to acquire and carry on the business of retail chemists and druggists, stationers, booksellers, etc., carried on by Boot's Pure Drug Co., Limited, at Nottingham, Sheffield, Lincoln, Derby, Grimsby, Ilkeston, Grantham, Burton-on-Trent, and elsewhere. The subscribers are:—

	Shares.
J. Boot, 14, Wellesley-road, Sheffield, druggist	1
A. L. Milne, 5, Arthur-street, Nottingham	1
W. D. Callaway, Heathcote Buildings, Nottingham	1
A. Thompson, 21, Promenade, Nottingham	1
W. Neville, Chilwell, Notts, lace manufacturer	1
S. L. Morell, 5, Noel street, Nottingham, clerk	1
J. Gibbs, Campbell House, Bromley, Kent	1

HYDRAULIC PORTLAND CEMENT SYNDICATE, LIMITED.—This company was registered on the 20th ult., with a capital of £5,000., in £5. shares, to carry on the business of cement and lime manufacturers in all its branches.

SMOKELESS BOILER AND ENGINEERING CO., LIMITED.—This company was registered on the 26th ult., with a capital of £100,000., in £5. shares, to acquire from the Jackson (British Patents) Co., Limited, certain inventions and letters patent for the United Kingdom and the Isle of Man, granted to Mr. J. Jackson for improvements in or connected with self-contained gas-fired steam-generators, No. 5,146, No. 14,555 and No. 15,865 of 1889, and No. 13,592 of 1890, to enter into the agreemen mentioned in clause 5 of the articles, and to carry on the business of gas-fired steam-generating boiler and furnace makers, iron, brass, and metal founders, mechanica engineers, etc. The subscribers are:—

	Shares.
E. C. Price, 109, Hanley-road, Crouch Hill, clerk	1
W. H. Stentiford, 55, Amberley-road, Paddington, W.	1
P. W. Bullock, 22, Upper George street, W.	1
H. Warner, 21, Great Winchester-street, E.C.	1
J. Aspinall, 34, Bowman's Buildings, Edgware-road	1
J. R. Chidley, 22, Great Winchester-street, E.C., solicitor	1
H. T. Bicknell, 87, St. George's-road, Southwark, clerk	1

The Patent List.

This list is compiled from Official sources in the Manchester Technical Laboratory, under the immediate supervision of George E. Davis and Alfred R. Davis, who report professionally upon the value of Chemical Patents.

APPLICATIONS FOR LETTERS PATENT.

Manufacture of Soap. R. Bell. 7,254. April 19.
Producing Metallic Zinc. P. C. Choate. 7,378. April 19.
Improvements in Gas Generators. A. J. Boult. 7,279. April 19.
Manufacture of Bleaching Powder and Apparatus Therefor. 7,393. April 19.
Improved Battery Element. Sir C. F. Forbes. 7,412. April 19.
Smoke Burning Apparatus. A. Philburn. 7,468. April 20.
Utilising Slag from Iron and Steel Furnaces. C. H. Aston. 7,473. April 20.
Electric Insulating Composition. T. Griffiths. 7,515. April 20.
Manufacture of Vinegar. J. W. Smith and H. B. Jagger. 7,528. April 21.
Brick, Tile, and Lime Burning Kilns. J. Duckett, A. Duckett, and H. Stephenson. 7,533. April 21.
Improved Measuring Funnel. J. W. James. 7,548. April 21.
Improvements in Rag Engines for the Manufacture of Paper. J. Hargreaves and R. Cooper. 7,553. April 21.
Oxidation of Aniline Black in Dyeing Cotton. C. Schmarch. 7,555. April 21.
Feed Water Heaters. J. Y. Johnson. 7,556. April 21.
Improvements in Soap or Washing Powder. R. Stewart. 7,581. April 21.
Treating India-Rubber Waterproof Fabrics. I. Frankenburg. 7,582. April 21.
Manufacture of Ornamented Waterproof Fabrics. I. Frankenburg. 7,585. April 21.
Using Dye Products from Manufacture of Acetates for Warming and Heating. G. Heslop. 7,614. April 22.
Preventing the Deterioration of Air by Illuminating Gas. W. J. Freeman and E. Freeman. 7,627. April 22.
Dyeing and Bleaching Cotton and Other Fibrous Material. G. Young and W. Crippin. 7,628. April 22.
Manufacture of White Lead. E. Waller and C. A. Sniffin. 7,631. April 22.
Manufacture of Gold, Silver, and Bronze Paints. W. Cutler. 7,688. April 23.
Substitute for Leather. A. J. Boult. 7,698. April 23.
Gas Purifying and Washing Apparatus. J. C. Chandler. 7,708. April 23.
Artificial Fuel. H. Pazolt. 7,709. April 23.
Regulating the Supply of Volatile Liquid to Refrigerators. T. B. Lightfoot. 7,712. April 23.
Manufacture of Artificial Marble. S. Theraizal and F. Grand'Montagne. 7,719. April 23.
Treating Smoke and Chemical or Other Fumes. H. H. Hazard. 7,721. April 23.

Gazette Notices.

PARTNERSHIPS DISSOLVED.

A. J. Crompton, G. W. Crompton, T. Travis, and T. Jones under the style of Crompton and Co., Craston and Southport, brick and tile manufacturers.

Stanley and Dawkins, Birmingham, electricians and electrical engineers.

G. W. Isaac and W. Berry under the style of G. W. Isaac and Co., Bristol, chemist, as far as regards W. Berry.

BANKRUPTCY ACTS, 1883 and 1890.

Receiving Orders.

Hassall, Stephen, Hanley and Newcastle-under-Lyme, chemist.

Smith, Henry, trading as Henry Smith and Co., Batley, chemist and druggist.

Adjudications.

Hassall, Stephen, Hanley and Newcastle-under-Lyme, chemist.

Watkins, Richard Roose (trading as Richard Watkins), St. Helens, oil merchant.

IMPORTS OF CHEMICAL PRODUCTS
AT
THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending April 23rd.

Acetate of Lime—

U. States,	1,704 pkgs.	Johnson & Hooper

Acetic Acid—

Holland,	3 pkgs.	Phillipps & Graves
Holland,	12	A. & M. Zimmermann

Acetic Acid & Acetone—

Flushing,	215 pkgs.	A. & M. Zimmermann

Acetone—

Holland,	3 pkgs.	A. & M. Zimmermann
,,	3	Little & Johnson

Alkali—

France,	205 c.	P. Hecker & Co.
,,	100	Arnati & Harrison

Alum—

Holland,	82 pkgs.	Ohlenschlager Bros.

Alumina Sulphate—

Holland,	101 pkgs.	Tough & Henderson

Asbestos—

Italy,	£177	A. H. Smith
N. Russia,	10	Beck & Pollitzer

Barytes—

Belgium,	21 cks.	Leach & Co.
,,	50 bgs.	T. H. Lee
,,	21	W. Harrison & Co.
,,	41	P. Jantzen
Germany,	26	J. Kitchen, Ltd.
,,	26	O'Hara & Hoar
,,	27	W. Harrison & Co.
France,	43	C. F. Gerhardt
Germany,	19	S. H. Willoughby

Brimstone—

Italy,	10 t.	C. J. Capes & Co.
,,	100	Seager, White, & Co.
,,	200	Brandram Bros. & Co.
,,	26	Blackwood & Co.
,,	200	Johnson & Hooper
,,	51	Windschuegl & Co.

Caoutchouc—

U. States,	98 c.	Lewis & Peat
Penang,	39	T. Merry & Son
,,	69	L. & I. D. Jt. Co.
Germany,	20	,,
E. Indies,	115	Ross & Deering
Mozambique,	18	Lewis & Peat
Rangoon,	95	L. & I. D. Jt. Co.
Madagascar,	9	Prop. Bull Wf.
,,	13	A. Cheney & Co.
,,	131	L. & I. D. Jt. Co.
Trinidad,	12	Lewis & Peat
Zanzibar,	11	L. & I. D. Jt. Co.
Portugal,	19	Anderson, Weber, & Smith
Holland,	60	J. Parlevliet

Carbonic Acid—

Holland,	20 pkgs.	H. G. Dutfield

Chemicals (*otherwise undescribed*)

Germany,	£6	T. H. Lee
,,	49 pkgs.	,,
,,	18	Phillipps & Graves
,,	49	A. & M. Zimmermann
,,	11	W. Burton & Sons
,,	387	B. Jacob & Sons
Holland,	£9	Phillipps & Graves
Belgium,	7	Arnati & Harrison
Germany,	10	H. Boyce

Cream of Tartar—

Italy,	15 pkgs.	Italo-Brit S N. Co.
Holland,	75	Middleton & Co.
Spain,	7 cks.	B. & F. Wf. Co., Ltd.
,,	11	W. C. Bacon & Co.
France,	3	B. & F. Wf. Co., Ltd.
,,	5	C. Christopherson & Co.
Italy,	21	Howards & Son
,,	4	Thames S. T. & L. Co., Ltd.
Holland,	27	N. Smith
France,	2	W. C. Bacon & Co.
,,	12	Smith, Abbott, & Co.
,,	3	B. & F. Wf. Co., Ltd.
Holland,	12	,,

Dyestuffs—

Argols

Greece,	3 pkgs.	C. W. Hancock & Co.

Cutch

Rangoon,	550 pkgs.	T. T. Creed
,,	300	J. & G. Bullock & Co.

Extracts

U. States,	150 pkgs.	Skilbeck Bros.
U. States,	50	W. Burton & Sons
France,	100	L. J. Levinstein & Sons
,,	232	Prop. Chmbln's Wf.
Denmark,	1	J. Sinclair & Son
Germany,	7	H. Lambert

Gambier

Singapore,	1,066 pkgs.	Beresford & Co.
,,	1,317	Adamson, Gilfillan, & Co.
,,	178	H. Lambert
,,	192	R. & J. Henderson
,,	429	Beresford & Co.

Indigo

E. Indies,	28 chts.	Ross & Deering
,,	25	F. Huth & Co.
Holland,	3	W. Adolph & Co.
E. Indies,	7	F. W. Heilgers & Co.
Germany,	1	H. Grey, jun.
E. Indies,	47	L. & I. D. Jt. Co.
,,	34	T. Barlow & Bros.

Myrabolams

Bombay,	420 pkgs.	Beresford & Co.
,,	770	L. & I. D. Jt. Co.
E. Indies,	164	,,
,,	3,609	J. Hatton, Hall, & Co.
,,	1,357	Marshall & French
,,	1,114	Lucas & Spencer's Wf., Ltd.
,,	340	Clarke & Smith
,,	160	L. & I. D. Jt. Co.
,,	1,366	W. Shelcott
,,	120	E. Davis & Co.

Naphthalene

Germany,	39 pkgs.	Fleming's Oil Co.

Saffron

Spain,	1 pkg.	Major & Field

Sumac

Italy,	345 pkgs.	Italo-Brit. S.N. Co.
,,	100	F. Roberts
,,	200	W. Barter & Co.
France,	496	Cyprus Co., Ltd.

Tanners' Bark

Belgium,	32 t.	A. Vitry & Co.
Adelaide,	61	Beresford & Co.
,,	23	Baxter & Hoare
,,	83	Devitt & Hett
Natal,	26	Hicks, Nash, & Co.
Melbourne,	220	Baxter & Hoare

Turmeric

E. Indies,	21 pkgs.	Price, Hickmann, & Co.
,,	122	L. & I. D. Jt. Co.

Valonia

A. Turkey,	100 t.	Hicks, Nash, & Co.
,,	20	A. & W. Nesbitt
,,	90	A. & J. Humphrey
,,	100	Adam Bros.
,,	5	Beresford & Co.
,,	71	Anning & Cobb

Farina—

Holland,	30 pkgs.	J. Barber & Co.
Germany,	85	H. Lorenz
,,	100	Humphrey & Co

French Chalk—

France,	£104	Page, Son, & East

Guano—

Jamaica,	30 t.	A. Hunter & Co.
Germany,	400	Anglo Contl. G. Works

Glucose—

U. States,	2,700 pkgs.	3,697 c.	R. G. Hall & Co.
,,	2,300	3,800	Union Lit-erage Co., Ltd.
,,	690	1,749	L. Sutro & Co.
France,	200	200	J. Barber & Co.
,,	200	200	Barrett Tagant & Co.
,,	11	105	Leach & Co.
Holland,	30	35	J. Owen
U. States,	100	575	Pillow, Jones, & Co.
,,	780	2,038	Prts. Chmbln's Wf.
,,	1,200	2,105	H. A. Litchfield & Co.
,,	500	500	Fellows, Morton, & Co.
,,	40	221	J. Keiller & Sons
,,	4,200	6,453	R. G. Hall & Co.
,,	100	602	Page, Son, & East
,,	50	264	W. Balchin
,,	75	405	Soundy & Sons
,,	150	750	L. Sutro & Co.

U. States, 200 200 Barrett, Tagant & Co.
" 290 1,735 J. Knill & Co.
" 150 860 B & N. Whos. Co.
" 425 2,338 Prp. Chmbln's. Wf.
" 500 500 L. Norman & Co.

Glycerine—
Germany, £50 Beresford & Co.
Holland, 175 J. Owen
" 840 Spies Bros. & Co.

Manure—
Germany, 152 t. F. W. Berk & Co., Ltd.
France, 500 J. Burnett & Sons

Manganese—
Australia, 21 t. French & Smith

Methyl Alcohol—
Belgium, 17 drs. Stein Bros.

Mica—
U. States, £35 Knight & Morris
E. Indies, 30 W. M. Smith & Sons

Nitre—
Caleta Buena, 11,093 bgs. W Montgomery
Chili, 9,528 bgs. Anglo Contl. Guano Works
" 10,211 W. Montgomery & Co.

Ochre—
France, 19 cks. W. Fenton
" 133 bgs. Brougham Young
" 42 Tegner, Price, & Co.
Holland, 12 pkgs. Phillipps & Graves
France, 100 brls. W. Harrison & Co.

Painters' Colours—
Belgium, 6 cks. Magee, Taylor, & Co.
Holland, 6 J. Owen
U. States, 2 Knight & Morris
Singapore, 26 L. & I. D. Jt. Co.
Germany, 9 pkgs. "
France, 6 Flageollet & Co.
" 17 Tingle, Jacobs, & Co.
U. States, 2 Pinchin, Johnson, & Co.
Germany, 9 cks. T. H. Lee
" 5 cs. Phillipps & Graves
" 2 pkgs. C. F. Gerhardt
" 8 Spies Bros. & Co.
" 1 F. Palmer
" 1 L. & I. D. Jt. Co.
U. States, 200 M. Ashby, Ltd.
France, 3 Page, Son, & East
Germany, 48 Phillipps & Graves
" 3 cks. H. Lambert
France, 8 Bennett S. S. Co., Ltd.
Belgium, 3 T. Palmer
U. States, 15 Davies, Turner, & Co.
Belgium, 1 cks. Leach & Co.

Paraffin Wax—
Germany, 30 pkgs. Ross & Deering
U. States, 210 brls. H. Hill & Sons
" 800 "
Rangoon, 202 cs. "
U. States, 168 Davy & Goulden
" 262 Produce Brokers Co.

Pitch—
Germany, 47 brls. C. B. Leighton

Plumbago—
Ceylon, 129 brls. Ross & Deering
Germany, 18 cks. Fellows, Morton & Co.
Holland, 10 cs. B. Galloway
Ceylon, 27 brls. Prop. Sun Wf.
" 155 Hoare, Wilson, & Co.
" 370 J. Throdder, Son, & Co.
" 112 R. G. Hall & Co.
" 184 Doulton & Co.
Belgium, 25 cs. Arnati & Harrison

Potash—
France, 200 c. F. W. Berk & Co.
" 50 Petri Bros.
Germany, 10 pkgs. L. & I. D. Jt. Co.

Potassium Bromide—
U. States, 30 pkgs. Baiss Bros. & Co.

Potassium Carbonate—
Holland, 300 c. Spies Bros. & Co.
Germany, 100 J. A. Reid
France, 5 Petri Bros.
" 20 J. A. Reid

Potassium Cyanide—
Holland, 20 pkgs. A. & M. Zimmermann

Potassium Muriate—
Germany, 508 pkgs. Anglo Contl. G. Works

Potassium Prussiate—
Germany, 9 pkgs. A. & M. Zimmermann

Potassium Sulphate—
France, 41 pkgs. Weatherley, Mead & Co.
Belgium, 47 F. W. Berk & Co., Ltd.

Rosin—
U. States, 4,398 brls. Moore and Hole
" 650 F. & S. Chieseman
France, 25 G. Meyer & Co.
U. States, 1,209 G. Nutter & Co.

Saltpetre—
E. Indies, 671 bgs. Co-op. Lighterage Association
" 961 C. Wimble & Co.
" 611 Lucas & Spencer's Wf.
Germany, 500 Anglo Contl. G Works
E. Indies, 1,311 Ralli Bros.
" 685 Wrightson & Son
Brazil, 50 H. Symons & Co.

Soda Crystals—
Belgium, 1,320 c. C. J. Capes & Co.
" 500 Knight, Hill, & Co.

Sodium Acetate—
France, 18 pkgs. H. Wallace & Co.

Stearine—
Belgium, 17 pkgs. C. S. Lovell
U. States, 17 cks. Beresford & Co.
" 9 cs. L. & I. Dk. Co.
Belgium, 50 bgs. H. Hill & Sons

Sugar of Lead—
Germany, 7 pkgs. Petri Bros.
" 18 Stein Bros.

Talc—
Austria, £67 A. Zumbeck & Co.

Tallow—
Sydney, 199 cks. J. Greig
" 40 Anning & Cobb
" 61 Coml. Banking Co. of Sydney
" 55 A. G. Anderson
" 101 Dalgety & Co., Ltd.
Germany, 70 C. B Leighton
Belgium, 3 G. Haller & Co.
N. Zealand, 9 R. Brooks & Co.
" 3 N. M. & A. Co. of N.Z.
Germany, 21 Hicks, Nash, & Co.
Sydney, 81 H. Lambert
" 35 Leach & Co
Adelaide, 169 J. Owen
Melbourne, 164 W. Pope & Co.
N. Zealand, 50 J. Greig
" 4 Culverwell, Brookes, & Co.
" 42 Low, Sons, & Bedford
U. States, 150 L. & I. Dk. Co.
" 25 Fuerst Bros.
N. Zealand, 70 Phœnix Whrvs. Co.
" 35 Slack, Chandler, & Co.
" 17 R. Brooks & Co.
France, 7 H. Hill & Sons
Adelaide, 4 Anning & Cobb
" 132 H. J. Perlbach & Co.
" 18 Goad, Rigg, & Co.
Melbourne, 142 Pillow, Jones, & Co.
" 52 Hicks, Nash, & Co.
" 75 J. Owen
Belgium, 17 G. Haller & Co.
N. Zealand, 8 Hoare, Wilson, & Co.
" 70 N. Z. L. & M. A. Co.
" 24 Dalgety & Co., Ltd.

Tartaric Acid—
Holland, 24 pkgs. Middleton & Co.
" 15 W. C. Bacon & Co.
Spain, 1 " N. Smith
Holland, 37 Anderson, Weber, & Smith
" 13 Northcott & Sons

Ultramarine—
Belgium, 15 pkgs. 6 cks. Leach & Co.
" 16 W. Harrison & Co.
Holland, 4 cks. J. Anderson & Co.

Varnish—
U. States, 1 pkg. Knight & Morris
" 32 Pinchin, Johnson, & Co.
" 5 Williams, Torrey, & Co.
Belgium, 1 D. C. Thomas & Sons

White Lead—
Germany, 5 cks. Steadman & Sons
" 8 Spits Bros. & Co.
" 11 cs Grosscurths & Luboldt
Holland, 37 Burrell & Co.
" 19 Randall Bros.
Germany, 20 S. H. Willoughby
France, 15 W. Harrison & Co.
Germany, 29 H. Lambert
" 20 Colthurst & Harding
Holland, 14 Spies Bros. & Co.

Zinc Oxide—
Germany, 6 cks. Beresford & Co.
" 25 J. Matton
France, 6 cs. G. W. Wheatley & Co.
Holland, 100 brls. M. Ashby, Ltd.

LIVERPOOL.

Week ending April 21st.

Acetate of Lime—
New York, 451 bgs.

Argentiferous Lead—
Callao, 474 sks. E. Aynlo
" 1,200 E. Garland & Co.

Borax—
Rosaria, 991 bgs. Torrome, Son, & Co.

Boracic Acid—
Leghorn, 16 cks. Shropshire Union Co.
" 82 "

Carbonic Acid Gas—
Rotterdam, 25 tubes.

Chloroform—
Havre, 1 pkg. Cunard S.S. Co., Ltd.

Cochineal—
Grand Canary, 10 bgs. Duranty & Sons

Colours—
Rotterdam, 24 cks.
Antwerp, 3 brls. J. T. Fletcher & Co.

Cottonseed Oil—
New York, 800 brls. T. M. Marc & Co.
" 40 "

Cream of Tartar—
Marseilles, 1 ck.
Barcelona, 5 cks. Bedars, Adams & Co.
" 5 "
Tarragona, 10 pps.

Dyestuffs—
Algorobilla
Valparaiso, 1,089 brls. Woodgate & Co.
Argols
Oporto, 23 cks. German Bank of London
Cutch
Rangoon, 1,015 bxs.
Divi divi
New York, 1 bg. Leech, Harrison & Co.
Hamburg, 2,106 bgs.
Dyewood Extract
New York, 5 brls. 10 bxs. F. Ree
Bordeaux, 100 cks.
Myrabolams
Bombay, 670 bgs. D. Sassoon & Co.
Calcutta, 471
Saffron
Valencia, 1 cs
Sumac
Palermo, 925 bgs
Valonia
Smyrna, 217 t. 2,138 bgs.
" 78 S. Vivante & Son
" 81 P. T. Apostolo
" 82 Essayan, Shahum & Co.
" 155 Barry Bros. & Co.

Dried Blood—
Monte Video, 645 bgs.

Farinaceous Substances—
Antwerp, 43 cs. J. T. Fletcher & Co.

French Chalk—
Rouen, 5 cs. Co-op. W'sale Society, Ltd.

Glucose—
Rouen, 10 cks. Co-op. W'sale Society, Ltd.

Iodine—
Valparaiso, 160 brls. A. Gibb & Sons

Kainit—
Hamburg, 1,731 bgs.

Manganese Ore—
Carthagena, 1,800 t.
Gothenburg, 150 Macqueen Bros.

Mineral White—
Trieste, 300 bgs. V. Pozzi

Ochre—
Marseilles, 44 cks.
Bordeaux, 28

Oxalate of Antimony—
Rouen, 3 cks. Co-op. W'sale Society, Ltd.

Paint—
Boston, 14 cs.

Phosphate—
Ghent, 1,000 bgs. J. T. Fletcher & Co.
" 1,600 "

Phosphate Rock—
Brunswick, 55 t. C. Page & Co.

Plumbago—
Antwerp, 20 bgs.

Potash—
Rouen, 7 cks. Co-op. W'sale Society, Ltd.
Hamburg, 11
Dunkirk, 99

Potassium Carbonate—
Hamburg, 6 cks.

Potassium Sulphate—
Dunkirk, 100 bgs.

Pyrites—
Huelva, 2,017 t. Matheson & Co.
Dunkirk, 1,720 Tennants & Co.

Saltpetre—
Calcutta, 1,068 bgs.

Soap—
Leghorn, 400 bxs. Brown Bros. & Co.
" 51 cs. "
Naples, 46 P. Behrends
" 106 Averny & Co.
Smyrna, 3
Marseilles, 6 J. Thompson

Soapstone—
Genoa, 100 bgs.
Bordeaux, 250 G. G. Blackwell
Genoa, 750 W. Harrison & Co.

Soda—
Marseilles, 1 ck. J. Glynn & Son

Soda Ash—
Rouen, 3 cks. Co-op. W'sale Society, Ltd.

Sodium Acetate—
Rouen, 8 cks. Co-op. W'sale Society Ltd.

Sodium Carbonate—
Havre, 2 pkgs. Cunard S. S. Co., Ltd.

Sodium Nitrate—
Pisagua, 11,225 bgs.

Stearine—
Antwerp, 25 bgs.

Stearine Pitch—
Rouen, 28 cks. Co-op. W'sale Society, Ltd.

Sulphur—
Naples, 120 bgs. 130 brls.
In transit, 20 cs.

Tallow—
New York, 135 hds. T. M. Marc & Co.
Philadelphia, 25
New York, 130
B. Ayres, 116 300 pkgs.

Tartar—
Naples, 4 cks. R. Powles
" 10 "
Palermo, 2 Langstaff & Co.
Rotterdam, 5
Bordeaux, 12

Tartaric Acid—
Rotterdam, 11 cks 30 kgs.
Marseilles, 4
Bordeaux, 6

Tincal—
Calcutta, 56 bgs.

Ultramarine—
Rotterdam, 8 cs. 4 cks.

Varnish—
New York, 6 brls. Standard Varnish Co.
Boston, 130 kgs. 3 2 bxs. W. H. Staynes & Smith

Verdigris—
Marseilles, 10 cks. J. A. W. Bird & Co.
Bordeaux, 4 cs.

White Lead—
Ghent, 13 cks.

White Zinc—
Rotterdam, 110 cks. O. & H. Marcus

Zinc Oxide—
Antwerp, 150 brls.

HULL.

Week ending April 23rd.

Alkali—
Bremen, 1 ck. 2 cs. Veltmann & Co.

Barytes—
Bremen, 19 cks. G. Holmes & Co.
Hamburg, 38 cks. Wilson, Sons & Co., Ltd

Chemicals (*otherwise undescribed*)
Stettin, 31 cks. Wilson, Sons & Co., Ltd.
Bremen, 1 bkt. 40 carboys Veltmann & Co.
Rotterdam, 5 pkgs. W. & C. L. Ringrose
Dunkirk, 1 ck. Wilson, Sons & Co., Ltd.
,, 22 pkgs.
Hamburg, 13 cks. Wilson, Sons & Co., Ltd.

Ceresin—
Stettin, 5 cs. Wilson, Sons & Co., Ltd.

Colours—
Rotterdam, 6 cks. 6 pkgs. G. Lawson & Sons
,, 17 pkgs. 101 cks. 22 cs. W. & C. L. Ringrose
,, 2 cs. 9 pks. Hutchinson & Son
Hamburg, 1 brl.
Boston, 52 pks. Wilson, Sons & Co., Ltd.
Flushing, 53 cks. 17 cs. Zeeland S. S. Co.
Danzig, 14 pkgs.
Antwerp, 11 cks. Bailey & Leetham
Bremen, 14 Veltmann & Co.
,, 20 W. S. Merrikin
,, 2
Antwerp, 10 pks. Wilson, Sons & Co., Ltd.
,, 1 ck. 1 brl.

Cottonseed Oil—
New York, 90 brls. Wilson, Sons & Co., Ltd.

Dyestuffs—
Alizarine
Rotterdam, 40 cks. 2 cs. W. & C. L. Ringrose
,, 30 pkgs ,, ,,
,, 36 Hutchinson & Son
Argols
Bordeaux, 120 bgs. Rawson & Robinson
Myrabolams
Bombay, 2,261 bgs.
Valonia
Marathonisi, 164 t. Dawson Bros.
Smyrna, 202

Farina—
Harlingen, 620 bgs.
Stettin, 100 Wilson, Sons & Co., Ltd.

Glucose—
New York, 725 brls.

Manganese—
Antwerp, 2 cks.

Oleine—
Dunkirk, 32 cks

Paint—
Boston, 55 pks. Wilson, Sons & Co., Ltd.
New York, 50 cs. ,, ,,

Phosphate—
Dunkirk, 199 bgs.

Phosphate Rock—
Beaufort, 1,650 t. Hammond, Emes & Co.

Pitch—
Amsterdam, 13 cks. H. F. Pudsey

Rosin—
Savannah, 3,257 brls.

Soap—
Boston, 4 cs. Wilson, Sons & Co., Ltd.
New York, 525 pkgs.

Soda—
Rotterdam, 30 cks. W. & C. L. Ringrose

Stearine—
Aalesund, 3 brls. Wilson, Sons & Co., Ltd.
Antwerp, 25 bgs. Hornby & Needler

Tallow—
New York, 432 pks. Wilson, Sons & Co., Ltd.
,, 6 brls. ,, ,,
Antwerp, 59 bgs. ,, ,,

Tartaric Acid—
Rotterdam, 2 cks. Hutchinson & Son
,, 8 W. & C. L. Ringrose

Tartar—
Bordeaux, 2 cks. Rawson & Robinson

Turpentine—
Bordeaux, 10 brls.
Libau, 51 Bedfern & Chatterton
,, 104

Ultramarine—
Rotterdam, 1 cs. W. & C. L. Ringrose
,, 12 cks. Hutchinson & Son
Bremen, 4

Varnish—
New York, 9 brls. Wilson, Sons & Co., Ltd.
,, 3 drms. Furley & Co.

White Lead—
Rotterdam, 32 cks.

GLASGOW.

Week ending April 28th.

Acetate of Lime—
New York, 459 bgs.

Barytes—
Rotterdam, 113 cks. J. Rankine & Son
,, 20

Barytes Sulphate—
Antwerp, 153 bgs.

Colours—
Rotterdam, 7 brls. 1 bx. J. Rankine & Son
Hamburg, 2 cks. 2 cs.

Cottonseed Oil—
New York, 150 brls.

Cream of Tartar—
Marseilles, 11 brls.
Barcelona, 5 cks.

Dyestuffs—
Alizarine
Rotterdam, 67 cks.
Dyewood Extract
Antwerp, 47 cks.
Madder
Marseilles, 5 brls.
Rotterdam, 2 cks. J. Rankine & Son
Sumac
Trieste, 25 bgs. Young & Strang

Farina—
Antwerp, 20 bgs.

Glucose—
New York, 100 brls. Stevenson & Son

Glycerine—
Rotterdam, 30 css. J. Rankine & Son

Ochre—
Rouen, 54 cks.

Potassium Prussiate—
Hamburg, 94 cks.

Rosin—
Savannah, 2,326 brls. Rowley & Dick
New York, 953

Stearine—
Antwerp, 200 bgs.

Tallow—
New York, 110 hds. 100 trcs.

Tartar—
Bordeaux, 13 cks.

Waste Salt—
Hamburg, 610 bgs.

White Lead—
Rotterdam, 63 cks. J. Rankine & Son
,, 58

Zinc, White—
Rotterdam cks. J. Rankine & Son

Zinc Oxide—
Antwerp, 25 cks.

TYNE.

Week ending April 23rd.

Alum Shale—
Hamburg, 66 cks., Tyne Steam Shipping Co.

Barytes—
Rotterdam, 110 bgs. Tyne Steam Shipping Co.

Colours—
Hamburg, 3 cs. Tyne Steam Shipping Co.

Phosphate—
Boulogne, 253 t. Langdale Chemical Manure Co.

Pyrites—
Huelva, 2,599 t. Scott Bros.

Rosin—
Charleston, 236 brls.

Salt—
Harburg, 440 t.

Sulphur Ore—
Villa Real, 730 t.

Ultramarine
Rotterdam, 1 ck. Tyne Steam S

GOOLE.

Week ending April 13t

Alum—
Rotterdam, 52 cds.

Dyestuffs (*otherwise undes*
Boulogne, 92 cds. 8 cs.

Dyestuffs—
Alizarine
Rotterdam, 92 cds.
Logwood
Belize, 919 t.
Jamaica, 870

Farina—
Hamburg, 1,290 bgs.

Glucose—
Calais, 400 bgs.

Glycerine—
Hamburg, 1 dm.

Phosphate—
Ghent, 813 bgs.

Potash—
Hamburg, 10 cds.
Calais, 61 dms.

Pyrites—
Huelva, 1,670 t.

Saltpetre—
Rotterdam, 100 bgs.
Hamburg, 18 bls.

Size—
Hamburg, 4 cds.

Sugar of Lead—
Hamburg, 30 bls.

Waste Salt—
Hamburg, 870 t. 1,038 cds. 700 b

GRIMSBY.

Week ending April 16t

Chemicals (*otherwise undescr*
Hamburg, 23 pkgs.

Dyestuffs—
Extracts
Dieppe, 7 cds.

Farina—
Hamburg, 74 bgs.

Farinaceous Substances—
Antwerp, 20 pkgs.

Kainit—
Hamburg, 500 bgs.

Zinc Ashes—
Antwerp, 16 cds.
Hamburg, 3 pkgs.

EXPORTS OF CHEMICAL PRODUCTS

OF

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending April 27th.

Acetic Acid—		
Wellington,	13 c.	£24
Algoa Bay,	9	31
Acids—		
Natal,	4 cs.	£12
Alkali—		
Champion Bay,	1 t. 10 c.	£6
E. London,	7	10
Aden,	6	4
Ammonia—		
M. Video,	5 cs.	£12
Ammonium Carbonate—		
Rangoon,	5 c.	£9
Montreal,	5 cks.	28
Ammonium Chloride—		
Hong Kong,	2 cs.	£27
Melbourne,	4 cks.	26
Ammonium Sulphate—		
Melbourne,	4 cks.	£26
Hamburg,	5 t. 2 c.	£55
Ostend,	56 16	584
Dunkirk,	15 5	140
Demerara,	29 2	311
Antwerp,	193	1,935
Arsenic—		
Dunedin,	2 t. 4 c.	£30
Calcutta,	5	106
Bisulphide of Carbon—		
Wellington,	1 t.	£15
Borax—		
Rotterdam,	1 ck.	£11
Hamburg,	8	63
Natal,	8	64
Constantinople,	8 c.	12
Boracic Acid—		
B. Ayres,	2 cks.	£13
Brimstone—		
Calcutta,	25 t.	£162
Calcium Hyposulphite—		
Hamburg,	2 cs.	£20
Caustic Soda—		
E. London,		9 c.
Lyttleton,		10
Philadelphia,	30 t.	
Wellington,	5	8
Adelaide,	10	
Algoa Bay,		4
B. Ayres,	3	10
Natal,	1	8
Carbolic Acid—		
Cape Town,	2 cs.	
Chemicals (*otherwise undescr*		
Champion Bay,	9 cs.	
East London,	1 t. 3 c.	
Port Elizabeth,	1 cs. 3 kgs.	
Malta,	3 c.	
Barcelona,	1 t. 18 c.	
Batoum,	5 cs.	

ıi,	6 pkgs.	44
k,	1 cs. 5 cks.	66
,	22 pkgs.	86
ɔn,	5 2 cs.	31
	10	16
ıe,	1	13
	12	101
	82	78
e,	53	31
),	10	20

ıid—

inople,	1 kg.	£10
	1 t.	168
ıe,	10 c.	80
;	10	73
a,	2 kgs.	24
	1 c.	10
ıhia,	5 t.	823
	5 kgs.	42

ducts—

	30 drs.	£75
;	140 brls.	67

ine

ıhia,	20 cks.	£295

e

	1 cs.	£21
ıe,	1	15
	1	70

acene

rf,	196 cks.	£1,308
	54	460
m,	123	479

l

m,	225 cks. 32 drs.	£1,906
	10 16 pns.	274

ar Dyes

	3 cks. 8 pkgs.	£423

ıte

	250 brls.	£167
;	50	24

Oil

;	200 brls.	£90

ha

l,	10 drs.	£12

alene

	26 cks.	£15
	100 bgs.	38
k,	6 cs.	20
;	132 pkgs.	153

in Wax

;	3 tks.	£140
	1,095 t. 28 cks.	£1,658
ıd,	30	51
	65 pkgs.	26
ɔ,	100 cks.	52
ırg,	20 brls. 50 cks.	39
	972 t.	1,458
ia,	250 brls.	85
k,	1,000 cks.	588
	2,183 t.	3,820
ia,	100 fkns.	10
	1,749 t.	2,862
don,	800 drs.	34
y,	130	12
	20 rnlts.	13
	30 brls.	16
ıe,	50 drs.	11
ıd,	800 brls.	£404
ırg,	150 rnlts.	119
m,	24 cks.	£70

Fluid—

	4 cs.	£12

ş—

	10 t. 3 c.	£21

ılphate—

	1 t.	£19
y,	10 c.	10
	10 4	142
	19 17	295
	4 2	58
	5	85
inople,	18	15
	10 9	170

f Tartar—

	5 c.	£25
e,	3	16
ıe,	2 t.	176
	2	10
	1 10	136
ners,	5	24
l,	5	23
	2	195

Disinfectants—

Rangoon,	9 pkgs.	£36
Brisbane,	34 cks. 16 pkgs.	110
Melbourne,	94	466
Sydney,	36 cs. 4	63

Ehrmanite—

Guadeloupe,	5 t. 4 c.	£130

Flowers of Sulphur—

Newcastle,	2 t.	£24

Glycerine—

Baltimore,	10 t. 8 c.	£148
Bombay,	10	21
B. Ayres,	52 cs.	111
Montreal.	19	57

Guano—

Bordeaux,	25 t.	£240

Hydrochloric Acid—

Durban,	10 cs.	£10
Cape Town,	10 c.	9
Algoa Bay,	7	7

Manure—

Jamaica,	4 t. 10 c.	£25
Treport,	39 18	248
Rouen,	61 10	240
Cherburg,	100	300
Barbadoes,	540	4,865
Guadeloupe,	118 5	1,550
St. Vincent,	50	500
Antigua,	2 19	31
Malaga,	2	18
Bordeaux,	20	100
Martinique,	78 1	455
Rouen,	85	320
Mauritius,	27 5	116
Gothenburg,	110	487

Mirbane—

Hamburg,	5 cs.	£22
Brussels,	10 drs.	18

Nitric Acid—

Algoa Bay,	5 c.	£14
Jersey,	30 crbys.	51

Oxalic Acid—

Gibraltar,	7 c.	£10

Phosphorus—

Hobart,	8 c.	£50
Dunedin,	14 cs.	88

Picric Acid—

Melbourne,	13 c.	£61

Potash—

Port Elizabeth,	5 c.	£5

Potash Crystals—

New York,	1 bx.	£15

Potassium Chlorate—

Natal,	2 c.	£7
Lisbon,	1 t.	63

Potassium Cyanide—

Calcutta,	7 c.	£17
Natal,	2 cs.	18

Salammoniac—

Salonica,	1 t. 1 c.	£36
B. Ayres,	1 cs.	11

Salicylic Acid—

Melbourne,	1 c.	£31

Saltpetre—

Oporto,	8 t. 4 c.	£167
Wellington,	10	11
Vigo,	3	64
Lisbon,	4 4	88

Salt Cake—

Antwerp,	130 t.	£227

Sheep Dip—

Cape Town,	101 pkgs.	£35
Natal,	210 drs.	34
Melbourne.	94	100
E. London,	9 c. 224 15 cs.	266

Soda—

Lisbon,	6 c.	£10
Barbadoes,	10	2
Natal,	1 t 2	£13
Algoa Bay,	1 18	7

Soda Crystals—

Newcastle,	11 t.	£34
Aden,	10 c.	2
East London,	19	3

Sodium Bicarbonate—

Trinidad,	1 t. 10 c.	£12
Barbadoes,	10	4
E. London,	6	5
Hobart,	5	2
Auckland.	2	4
Wellington,	10	4
Cape Town,	10	4
Pt. Chalmers,	1 5	9

Sodium Silicate—

Natal,	6 c.	£2

Sodium Sulphate—

Ghent,	50 t.	£75

Strontium Nitrate—

Madras,	14 pkgs.	£30

Sulphur—

Natal,	1 t.	£10
Lisbon,	250 brls. 202 pkgs.	372
Capetown,	350	304

Sulphuric Acid—

Durban,	1 t. 10 c.	£20
Natal,	20 drs. 13 cs. 21 pkgs.	41
Rangoon,	15 c.	8

Tartaric Acid—

Newcastle,	3 c.	£18
Auckland,	5	30
Lisbon,	3	17
Pt. Chalmers,	2	12
Brisbane,	2	11
Monte Video,	4 cks.	103
Capetown,	5 c.	26

Tartaric Acid and Citric Acid—

Montreal,	1 t. 8 c.	£175

LIVERPOOL.

Week ending April 27th.

Acetic Acid—

St. John's, Nfld ,	10 brls.	£32

Alum—

Salonica,	1 t. 1 c.	£5
Varna,	2 3	11
Smyrna,	23 8	91
Quebec,	6 2	33
Malta,	1 19	10
Calcutta,	20 3	100
Havana,	3 13	18
London, Ont.,	1	6

Alum Cake—

Calcutta,	13 t. 12 c. 3 q.	£47

Aluminoferric—

San Francisco,	5 t. 12 c.	£17

Ammonium Carbonate—

Hamburg,	3 c. 1 q.	£9
Maranham,	6	7
Antwerp,	2 t. 2	60
Barcelona,	4	6
Valparaiso,	1 10	56
Rotterdam,	1	30
Toronto,	1	45
Venice,	2 10	65
Gothenburg,	11 4	20

Ammonium Chloride—

Smyrna,	16 c. 1 q.	£27
Antwerp,	6 3	8
Varna,	13	24
Philadelphia,	14 t. 3 5	330
Alexandretta,	2	66
Messina,	11 1	19
Barcelona,	1 16 2	40

Ammonium Sulphate—

Las Palmas,	25 t. 12 c. 1 q.	£258
Barcelona,	51 2 1	517
Valencia,	113 7 2	1,163
New Orleans,	31	310
St. Vincent,	2 3 1	22

Barium Sulphate—

Para,	4 t. 4 c. 2 q.	£16

Borax—

San Juan,	1 ck.	
Antwerp,	4	
Hamburg,	10	
Norrkoping,	3	
San Sebastian	2	
Sydney,	40	
Stettin,	3	
Havana,	2	
Puebla,	8 brls.	
Rotterdam,	5	
Stockholm,	12	
Havana,	10 c.	£17
Puebla,	1 t.	30
Stockholm,	4 13	136
Rotterdam,	4 3 3 q.	126
Malta,	4	7

Borate of Lime—

Rotterdam,	10 t. 7 c.	£122

Bleaching Powder—

Baltimore,	255 cks.	
Boston,	631	
Corunna,	8	
Kingsey,	20	
Montreal,	160	
Newport News,	71	
Philadelphia,	190	
Calcutta,	176 cs.	
Genoa,	56	
Havana,	22 brls.	
Mexico City,	50	
New York,	56 pkgs. 10 bxs. 352 cks.	
San Sebastian,	39 cks.	
Chicago,	10 pkgs.	
Copenhagen,	30 cks.	
Ghent,	69	
Rouen,	15	

Calcium Chloride—

New York,	10 t. 1 c.	£22

Carbolic Acid—

Hiogo,	16 c.	£35
Calcutta,	2 t. 7	25
Rotterdam,	5 8	258
Genoa,	2 9	88
Yokohama,	4 19 1 q.	202
Nagasaki,	1 15 2	80
New York,	4 10	179

Caustic Potash—

Chicago,	4 c.	£5
New York,	10	12
Algoa Bay,	10	18
Atago,	1 t. 1	25
Melbourne,	2 5	50

Caustic Soda—

Alexandria,	108 dms.	
B. Ayres,	20	
Geffe,	5 26 brls.	
Hespeler,	5	
La Guayra,	50	
Messina,	36	
Montreal,	253 100 kgs.	
Nantes,	216	
New York,	1,242 10 bxs. 15 pkgs.	
Ottawa,	60	
Rouen,	17	
Smyrna,	200	
Trieste,	60	
Woodstock,	320	
Yokohama,	100	
Alicante,	16	
Bombay,	20 kgs.	
Boston,	50 brls.	
Brisbane,	47 dms. 5 bxs.	
Calcutta,	134	
Callao,	20	
Cathagena,	60 25 brls.	
Chicago,	48 bxs. 14 cks.	
Cochin,	63 dms.	
Colon,	34	
Corunna,	4 8 brls.	
Havana,	60	
Hiogo,	200	
Malaga,	32	
Milwaukee,	100	
Newfairwater,	74	
Odessa,	200	
Oporto,	30	
Para,	18	
Port Algre,	50	
Progresso	30	
Rosario,	20	
Rotterdam,	2 2 dms.	
Santos,	50	
Seville,	152	
Stettin,	33	
Sydney,	18	
Amsterdam,	20 kgs.	
Antonia,	5 brls.	
Barcelona,	460 dms. 30 cks. 20 brls.	
Cadiz,	60 kgs.	
Halifax,	25 pkgs.	
Hamburg,	150 dms.	
Madrid,	50	
Philadelphia,	25 brls.	
Rotterdam,	10 kgs.	
St. John's, N.B.,	35 dms.	
,, Nfld.,	2 cs.	
Valencia,	3 cks. 3 brls.	

Chemicals (*otherwise undescribed.*)

Catania,	9 c.	£20
Santos,	5	9
Riga,	9 2 q.	15
Bombay,	7 t. 15	271
Genoa,	12 2	22
Ancona,	11 3	21
Syra,	3	5
Hamburg,	17 2	32

Copperas—
Rio de Janeiro, 2 t. 18 c. 3 q. £7
Smyrna, 29 1 5 64
Quebec, 11 15 23

Copper Sulphate—
Rotterdam, 15 t. 2 c. 2 q. £908
Rouen, 113 15 1,706
Singapore, 15 11
Tarragona, 22 16 331
Valparaiso, 2 30
Parana, 1 15
Bordeaux, 4 19 1 75
Montreal, 25 brls. 1 5 3 110
Coronel, 1 10 27
Bahia, 5 1 5
Venice, 20 12 3 307
Osmara, 9 7
Ancona, 5 12 80
B. Ayres, 12 180
Beyrout, 10 7
Genoa, 5 19 88
Ghent, 5 72
Leghorn, 13 11 190

Chromium Acetate—
Montreal, 1 t. 7 c 1 q. £65

Disinfectants—
Kingston, 2 c. £8

Epsom Salts—
Halifax, 16 brls.
Montreal, 25
St. John's, N.B., 25
Santos, 25
Alexandria, 94 kgs.
Savanilla, 2 bls.
Constantinople, 10 brls.
Sherbro, 1 cs.

Glycerine—
Santander, 3 c. £8
New York, 40 t. 2,800
Rotterdam, 7 14 108

Gypsum—
Ghent, 5 t. £20
New York, 35 13 c. 121

Lead Acetate—
Montreal, 13 c. £18

Magnesia—
Valparaiso, 20 cs.
Antwerp, 13

Magnesium Chloride—
Boston, 5 t. £16
Bombay, 5 3 c. 15
Hiogo, 20 dms.
Malaga, 4 cks.

Magnesium Carbonate—
Guadalagara, 4 cs.

Manganese—
Baltimore, 50 t.

Manganese Sulphate—
Detroit, 4 cks.

Manure—
Valencia, 105 t. 1 c. 2 q. £288
Bordeaux, 210 12 844
Antwerp, 6 14 1 34
Kingston, 17 2 1 160

Metallic Sodium—
Rotterdam, 20 cs.

Oxalic Acid—
Naples, 2 t. £58

Paint—
San Sebastian, 6 brls.
B. Ayres, 10 cks.
Detroit, 100 kgs.
Genoa, 1 ck.
Jaffa, 12 pkgs. 2 cks.
La Libertad, 181 kgs. 8 cs. 6 cks.
Lanzarotte, 91
Lisbon, 6 cs. 126 kgs. 6 dms 8 cks.
Marseilles, 14 pkgs. 15 cks.
Mayaquery, 11 cks. 4 brls.
Monte Video, 1 cs.
Oporto, 2 pkgs.
Para, 31 2 cks. 3 brls.
Paris, 16
Piræus, 25 kgs.
Puerto Plata, 14 cks.
St Domingo, 215 pkgs.
Trieste, 40 cks.
Bonny, 5 dms.
Calcutta, 13 cks.
C. C. Castle, 13 pkgs.
Cienfuegos, 1 ck.
Curacao, 1
Durban, 20 kgs.
Gothenburg, 50 bgs.
Havana, 1 ck. 89 pkgs.
Lagos, 9 kgs.
La Guayra, 65 kgs.
Leghorn, 1 cs.
Maceio, 12 kgs.
Manilla, 28 cks 700 bgs.
Montreal, 67 cks.
New York, 10
Ottawa, 5 brls. 4 kgs. 1 cs.
Philadelphia, 100 cks.
Ponce, 1 brl.
Porto Alegre, 7 pkgs.
Rangoon, 6 brls.
Rotterdam, 4 cs. 6 cks.
St. Catharine, 21 pkgs.
St. Croix, 2 cks.
St. John's, Nfld., 68 pkgs. 7 cks.
Trinidad, 1 cs.
Valparaiso, 90 brls. 11 cs. 50 kgs. 185 pkgs.

Painters' Colours—
Alexandria, 35 brls.
Calcutta, 7 cks.
Galatz, 7 cks. 260 kgs.
Ibrail, 85 kgs. 7 cks.
Iquique, 20 cs.
La Guayra, 17 kgs.
Lisbon, 1 ck.
Acayutea, 12 brls.
Canada, 1 cs.
Montreal, 3,990 pkgs.
Toronto, 8 brls.

Pitch—
Rouen, 1 ck.
Genoa, 1,231 t. 3 c.
Brindissi, 647
Copenhagen, 25

Phosphorus—
Hiogo, 12 c. 3 q. £108
Puebla, 6 cs. 66
Tientsin, 16 170
Shanghai, 6 60
B. Ayres, 1 6

Potash—
Antwerp, 1 t. 9 c. 3 q. £38

Potassium Bichromate—
Bahia, 16 c. 1 q. £48

Potassium Carbonate—
Boston, 6 t. 14 c. £170
Chicago, 17 17
Valencia, 2 17 1 q. 40

Potassium Chlorate—
Trieste, 8 c. £24
Boston, 2 t. 5 115
Naples, 1 10 74
Rotterdam, 1 47
Shanghai, 1 10 69
Gothenburg, 15 10 758
Shanghai, 7 10 341
Philadelphia, 2 10 118
Vera Cruz, 2 97
Buenos Ayres, 4 cks. 10 c. 37
New York. 10 t. 570
Copenhagen, 4 226
Hiogo, 2 10 114
Kingston, 1 49
Corunna, 1 64
Hamburg, 6 297

Potassium Muriate—
St. Vincent, 2 t. 3 c. 1 q. £23

Potassium Prussiate—
Bilbao, 2 c. £16
Constantinople, 3 14
Rio de Janeiro, 10 47

Salt—
Accra, 10 t.
Antwerp, 50
Barbadoes, 300
Brisbane, 50
Halifax, 1,487¼
Las Palmas, 10 c.
London, Ont., 240 t. 4 c.
Montreal, 500 sks. 1,000 bgs. 429 t.
Newcastle, 338 t.
New York, 1,579½
Norrkoping, 62
Opobo, 60
Rio de Janeiro, 1 16 c.
Rotterdam, 107
St John's, N.B., 1 1
Salt Pond, 7¼
Tuborg, 1,000
Akasta, 400
Benin, 16
Boston, 849
Brass, 100
Cape Town, 24
East London, 11
Galveston, 100
Grand Bassa, 11¼
Isles de Los, 50
Melbourne 100
Miramichi, 206
New Orleans, 897 17
Newport News, 596 13
Old Calabar, 175
Portland, Maine, 20
Port Natal, 10
Quebec, 1,310
St. John's, N.B., 600
,, Nfld, 19
B. Ayres, 54¼
Stockholm, 20
Sydney, 243
Valparaiso, 3½
Vancouver, 6
Victoria, B.C., 80
Warre, 12
Abonnema, 14
Black Point, 10
Buguma, 20
Calcutta, 3,278
Cameroons, 17 6
Fuca Fuca, 100
Ghent, 86
Halifax, 325
Iquique, 30
Landana, 5
Morant Bay, 50 bxs.
Mussico, W.C.A., 58
San Francisco, 125
Trinidad, 20

Salt Cake—
Newport News, 50 t. 15 c. £131
Baltimore, 278 16 730
Pittsburg, 100 5 266
Baltimore, 104 4 274

Saltpetre—
Havana, 14 c. £16
Maranham, 11 1 q. 13
Geara, 8 t. 9 3 184
Pernambuco, 7 3 3 161
Para. 10 11
San Francisco, 12 6 261
Maceio, 3 10 5 94
Piracuo, 4 10 47

Sheep Dip—
New Orleans, 50 cs. £75

Soap—
Algoa Bay, 8 cs. 2,620 bxs.
Barbadoes, 1,000
Bombay, 45 810
Curacao, 6 518
Gibraltar, 230
New York, 174 6 cks. 525
St. John's, Nfld., 11 225
Accra, 40
Akosta. 50
Alexandria, 3 brls. 30
Assinee, 48
Axim, 170
Belize, 300
Benin, 100
Bilbao, 4
Calcutta, 2 cs. 250 bdls.
C. C. Castle, 180 bxs.
Cape Town, 2,670
Copenhagen. 30
Durban, 200
Dixcove, 100
E. London, 2,308
Genoa, 75
Ghent, 200
Grand Bassa, 30
Havre, 120
Kurachee, 28 750
Lagos, 155
Leghorn, 20
Lisbon, 530
Madras. 11
Monte Video, 40 dms.
Montreal, 1 c. 6 brls. 19 kgs.
Mossel Bay, 120 bxs.
Palma, 224
Port Elizabeth, 350
,, Natal, 1,173
Rosario, 3
Sandy Point, 10
Trinidad, 800
Vera Cruz, 2
Shanghai 2 8,859
Sherbro, 518
Sierra Leone, 50
Singapore, 20
Sydney, 17 tks.
Teneriffe, 868
Valparaiso, 8 cs. 900
Vancouver, 79
Warre. 300
Acajutla, 40
Antwerp, 5 150
Batanga, 50
Batavia, 1,500
Bathurst, 50
Bonny, 250
Buguma, 100
Cabenda, 300
Cameroons, 140
Ferrol, 25
Guayaquil, 100
Half Jack, 20
Iquique, 10 dms.
Kingston, 1,430
Loanda, 300
Loango, 50
Malta, 40
Morant Bay, 50
Opobo, 900
Old Calabar, 300
Riodel Bay, 50
St. Ann's Bay, 25
St. Kitts, 200
Salt Pond, 100
Sumarang, 100
Savanilla, 1 cs.

Soda Ash—
Baltimore, 563 cks. 400 bgs.
Boston. 109 700
B. Ayres, 50 brls. 50
E. St. Louis, 2,111
Gothenburg, 6
Maranham, 130 cs.
Montreal, 56 brls. 20 96
New York, 237 400 1,
Philadelphia, 310 200 2,
Portland, Me.,
Santos, 50 brls.
Boston, 82 1,046
Constantinople, 3
Hespeler,
M. Video, 50 brls.
Rosario, 220
Smyrna, 40 60
Bahia, 3 cs.
Bombay, 8
Calcutta, 5
Callao, 55
Corfu, 50
Piræus, 100
Santander, 21
Yokahama, 334

Soda Alkali—
Genoa, 34 brls.
Leghorn, 40
Quebec, 62
Sydney, 50
Toronto, 215
Vólo, 17
Lisbon, 40
Newcastle, 40

Soda Crystals—
Halifax, 30 brls.
Montreal, 355 kgs. 854
Portland, 150
Hespeler, 100
Miramichi, 3
New Orleans, 67
Philadelphia, 167
St. John's, N.B., 90
,, Nfld., 50
Vera Cruz, 150 10 2
Toronto, 67
Boston, 100 56
Malta, 14
N. Y. 60 cks.
Singapore, 15
Yokohama, 100

Sodium Arseniate—
New York, 20 cks.

Sodium Biborate—
Toronto, 1 t. 1 c. 3
Hamburg, 10 10
New York, 1 13
Rotterdam, 5 4 2
Havre, 37 brls.
Hamburg, 20 cks.

Sodium Bicarbonate—
Antwerp, 1 ck. 35 kgs.
Brisbane, 50
Cairo, 80
Calcutta, 1,500
Capetown, 100
Catania, 50
Halifax, 220
Messina, 40
Montreal, 20 bgs. 905 15
Portland, Me., 20
Santander, 40
Boston, 30
Brantford, 15
Buenos Ayres, 150 6
Copenhagen,
Danzig, 20
Fairwater, 100
Ghent, 41
Hamburg, 20 2
Havre, 134
Konigsberg. 40 pkgs.
London, Ont., 55
Mexico City, 50
Miramichi, 20
Rotterdam, 50
St. John's, N.B., 1,100
,, Nfld., 20
San Sebastian, 30
Stettin, 249
Toronto, 25 cks.
Trieste, 20 240
Alicante, 50
Bordeaux, 80
Rouen, 50 brls.
San Juan, 30
Venice, 100
Yokohama, 9 3,000

odium Bichromate—
Rotterdam, 5 c. £6
Calcutta, 5 kgs.

odium Carbonate—
Ottawa, 196 brls.
Boston, 84 88 cks.
New York, 238

odium Chlorate—
Hamburg, 10 c. £31
Rotterdam, 1 t. 60
" 4 kgs.
Hamburg, 30
Yokohama, 50

odium Nitrate—
Almeria, 2 t. 12 c. £24
Malaga, 9 15 3 q. 91
Lisbon, 10 6 3 95
Montserrat, 5 2 3 40
Ancona, 3 17 3 36

Sodium Silicate—
Barcelona, 100 brls.
Bilbao, 35
Coruna, 10
Melbourne, 10
Pasages, 35
Valencia, 15 cks.
Vigo, 8 brls.

Sodium Stannate—
Rouen, 1 ck.

Sodium Sulphate—
Calcutta, 1 brl.
Seville, 250 cks.
Valparaiso, 1 brl.

Sodium Supersulphate—
Valparaiso, 1 t. £9

Sulphur—
Montreal, 1 t. 15 c. £16
Havana, 15 2 q. 7
Maranham, 1 2 3 9
Puebla, 10 78
Pernambuco, 3 16 32
Iquique, 12 17 101
Geara, 1 19 12
Toronto, 2 10 25
Boston, 667 bgs. 519
Maceio, 11 c. 3 q. 5
Halifax, 5 t. 17 48

Sulphuric Acid—
Rio Grande do Sul, 19 c. 2 q. £10

Superphosphate—
Valencia, 30 t. £101
Gr. Canary, 25 65
St. Vincent, 4 6 c. 1 q. 10

Tallow—
Boca, 1 ck.
Alexandria, 14 brls.
Bilbao, 37
Manilla, 2 cks.

Tar—
St. John's, Nfld., 15 cks. 125 brls.
Callao, 80
Ibrail, 50
Mosamedes, 10
St. John's, Nfld, 6 pkgs.
Genoa, 5 cks.

Turpentine—
Monte Video, 20 dms.

Varnish—
Buenos Ayres, 6 cs.
Catania, 3
Genoa, 1
Montreal, 10
Antwerp, 3
Valparaiso, 5

Verdigris—
Boston, 10 £183

White Lead—
Ferrol, 3 cks.

Zinc Chloride—
Bombay, 15 t. 17 c. 1 q. £299

GLASGOW.

Week ending April 28th.

Ammonium Muriate—
Bilbao, 5 t. 11¾ c. £100

Ammonium Sulphate—
New York, 18 t. 4¾ c. £210

Benzol—
Rotterdam, 30 dms. £405

Bichrome—
Italy, 156½ c. £255
Rouen, 295½ 425

Chemicals *(otherwise undescribed)*
Rangoon, 6 t. 15¾ c. £25 14s.

Colours—
Quebec, 2½ c. £35

Copperas—
Quebec, 15 t. 5¼ c. £34

Crude Anthracene—
Rotterdam, 8 t. 12 c. £34

Dyestuffs—
Logwood Extract
Halifax, 120½ c. £226
Quebec, 166¼ 204

Epsom Salts—
Quebec, 22¾ t. £67

Farina—
Italy, 6 t. £81

Linseed Oil—
Rangoon, 196 gls. £20
Malta, 404 36 18s.
Mauritius, 3 t. 1½ c. 67
Montreal, 6 4 108

Manure—
Mauritius, 25 t. £87

Naphtha—
Rouen, 12 c. £267

Paint—
Rangoon, 3 t. 15¾ c. £62
Monte Video, 12 10 152
Alexandria, 1 20

Painters' Colours—
Rangoon, 52 c. £26
Mauritius, 10 t. 16¼ 147
Alexandria, 84
Colombo, 44 48 12s.

Paraffin Wax—
Straits, 1 t. 15½ c. £60
China, 9 16¼ 280
Japan, 325¾ 393
Bilbao, 53¾ 60

Pitch—
Rouen, 49¾ t. £75
Bordeaux, 105 3 c. 217 10s.
Quebec, 131 2 180

Potassium Bichromate—
Halifax, 157 c. £240
Alexandria, 17¾ 30
Philadelphia, 148 277
Rotterdam, 27 cks. 362

Rosin Oil—
Halifax, 51½ c. £31
Christiania, 7 brls. 14
Stockholm, 148 373 11s.

Salt—
Mauritius, 361 t. £397
Bilbao, 1 4½ c. 31

Soap—
Rangoon, 6 c. £41
Halifax, 4 t. 8½ 69
Mauritius, 15 230

Soda Ash—
Philadelphia, 3,021 c. £875

Soda Salts—
Christiania, 1 ck. £8

Sodium Bichromate—
Rouen, 335½ c. £360

Sodium Sulphate—
Quebec, 11 t. 7¼ c. £21

Sulphuric Acid—
Rangoon, 52 t. 7 c. £553
Colombo, 4½ 25
" 75

Tallow—
Rotterdam, 168 c. £309

Tar—
Philadelphia, 25 t. £26
Danzig, 750 brls.

White Lead—
Malta, 2 c. £2 10s.

HULL.

Week ending April 23rd.

Alkali—
Stettin, 19 cks.

Benzol—
Ghent, 15 cks.

Bleaching Powder—
Bremen, 4 cks.
Stettin, 60

Caustic Soda—
Bremen, 1 cs.

Chemicals *(otherwise undescribed)*
Antwerp, 1 pkg.
Bremen, 3
Bergen, 6 cs. 2 cks.
Christiania, 2 6 pks. 651 albs.
Christiansand, 312
Gothenburg, 38 38 cks. 20 pkgs.
Genoa, 40 kgs.
Harlingen, 42 cks.
Hamburg, 55 cs. 10 brls.
Libau, 60 kgs.
Marseilles, 15 cs.
Rotterdam, 20
Riga, 1 ck. 4 kgs.
Stettin, 4 cs. 45 cks. 14 pks.

Cottonseed Oil—
Amsterdam, 10 c.
Bremen, 53
Christiania, 41
Flushing, 277
Gothenburg, 80
Genoa, 500
Hamburg, 700
Marseilles, 200
Rotterdam, 1,269
Stavanger, 201
Stettin, 478

Creosote—
Antwerp, 1 ck.

Dyestuffs *(otherwise undescribed)*
Antwerp, 1 t. 1 ck.
Riga, 2 cs.
Stettin, 1

Dyestuffs—
Achill Paste
Antwerp, 2 cks.

Linseed Oil—
Bremen, 128 c.
Bergen, 28
Christiania, 884
Drontheim, 443
Hamburg, 556
Stavanger, 31

Manure—
Genoa, 500 bgs.
Ghent 20 t.
Rotterdam, 200 bgs.
Stettin, 413

Ochre—
Antwerp, 4 cks.

Painters' Colours—
Antwerp, 6 cs. 10 cks. 3 pks.
Bremen, 1
Christiansand, 36 cks.
Bergen, 4 114 dms. 36 pks.
Christiania, 1 cs. 5 cks.
Gothenburg, 1 10
Genoa, 8
Ghent, 9
Hamburg, 3 84
Hango, 22 2
Leghorn, 10
Rouen, 4
Rotterdam, 1 6
Stockholm, 1
Stettin, 76

Paint—
Bremen, 22 kgs.
Drontheim, 1 ck.
Leghorn, 302 t.
Naples, 64 kgs. 1 ck.

Pitch—
Antwerp, 100 t.
Genoa, 90

Soap—
Bremen, 2 kgs.
Christiania, 50 cs.
Rotterdam, 24 dms. 20 cs.
Stockholm, 1

Soda—
Naples, 1 ck.

Tallow—
Gothenburg, 1 ck.

Tar—
Bremen, 2 cks.
Amsterdam, 5

Ultramarine—
Rotterdam, 5 cs.

Yarnish—
Amsterdam, 7 cks.
Bremen, 2
Christiansand, 1 cs.
Ghent, 2 1 ck.
Hango, 3
Naples, 1
Rotterdam, 5 brls.

TYNE.

Week ending April 23rd.

Alkali—
Riga, 5 t. 18 c.
Amsterdam, 22 6
Christiania, 6 11
Antwerp, 4 6
Ammonia—
Pomaron, 459 lbs.

Antimony—
Hamburg, 2 t. 13 c.

Barytes Carbonate—
Hamburg, 102 t. 15 c.
Antwerp, 10 1

Bleaching Powder—
Riga, 20 t. 4 c.
Hamburg, 3 16
Antwerp, 81 12
Amsterdam, 12 5
Drontheim, 9 15

Borax—
Ergastiria, 15 c.

Caustic Soda—
Antwerp, 5 t. 6 c.
Christiania, 1 4
Drontheim, 2 12
Aalesund, 6

Hydrochloric Acid—
Pomaron, 1,149 lbs.

Litharge—
Riga, 5 t. 14 c.
Hamburg, 1 7
Odense, 5
Antwerp, 1 1
Copenhagen, 6

Magnesia—
Hamburg, 15 c.

Napthalene—
Riga, 25 t. 6 c.

Nitric Acid—
Pomaron, 369 lbs.

Paint—
Arendal, 2 c.

Salammoniac—
Pomaron, 2 c.

Soda—
Naksdov, 8 t. 1 c.
Antwerp, 11 17

Soda Ash—
Hamburg, 19 t. 17 c.
Antwerp, 6 12
Christiania, 19 17
Odense, 3 7

Sodium Sulphate—
Helgenas, 364 t. 17 c.

Sodium Supersulphate—
Madras, 2 t.

Sulphur—
Antwerp, 1 t.
Riga, 25
Christiania, 25

Superphosphate—
Stavanger, 5 t.

White Lead—
Copenhagen, 4 t. 8 c.
Pomaron, 12

GOOLE.

Week ending April 13th.

Alkali—
Antwerp, 4 cds.
Dunkirk, 30 dms.

Benzol—
Rotterdam, 192 cds.

Bleaching Powder—
Antwerp, 23 cds.

Chemicals *(otherwise undescribed)*
Hamburg, 20 dms.
Rotterdam, 77 cds.

Coal Products—
Boulogne, 26 cds.
Hamburg, 75

Dyestuffs *(otherwise undescribed)*
Rotterdam, 5 cds.

Manure—
Dunkirk, 253 bgs.
Boulogne, 142
Ghent, 799

Pitch—
Antwerp, 652 t.
Dunkirk, 99

GRIMSBY.

Week ending April 16th.

Chemicals *(otherwise undescribed)*
Antwerp, 1 cd. 1 cs.
Dieppe, 32 pkgs. 1 dm.
Hamburg, 86 cds. 33 pkgs. 27 dms.

Coal Products—
Dieppe, 25 cds.

PRICES CURRENT.

WEDNESDAY, May 4th, 1

Prepared by Higginbottom and Co., 116, Portland Street, Manchester.

The values stated are f.o.r. *at maker's works, or at usual ports of shipment in U.K. The price in different localities may v*

	£	s.	d.
Acids:—			
Acetic, 25 °/₀ and 40 °/₀ .. .. per cwt.	7/- & 11/-		
,, Glacial .. .. ,,	50/-		
Arsenic, S.G., 2000° .. .. ,,	0	13	6
Fluoric .. .. per lb.	0	0	3¼
Muriatic (Tower Salts), 30° Tw. .. .. .. per bottle	0	0	10
,, (Cylinder), 30° Tw. .. .. ,,	0	3	0
Nitric 80° Tw. .. .. per lb.	0	0	2¼
Nitrous .. .. ,,	0	0	1¾
Oxalic .. .. nett ,,	0	0	3
Phosphoric, 1750° .. .. ,,	0	1	2½
Picric .. .. ,,	0	0	10¼
Sulphuric (fuming 50 °/₀) .. .. per ton	15	10	0
,, (monohydrate) .. .. ,,	5	10	0
,, (Pyrites, 168°) .. .. ,,	3	5	0
,, (,, 150°) .. .. ,,	1	5	0
,, (free from arsenic, 145°) .. .. .. ,,	1	7	6
Sulphurous (solution) .. .. ,,	2	15	0
Tannic (pure) .. .. per lb.	0	1	2
Tartaric .. .. ,,	0	1	1
Arsenic, white powdered .. .. nett per ton	10	17	6
Alum (loose lump) .. .. ,,	5	5	0
Alumina Sulphate (pure) .. .. ,,	5	0	0
,, ,, (medium qualities) .. .. .. ,,	4	15	0
Aluminium .. .. per lb.	2s. 8d. to	0	3	2
Ammonia, ·880=28° .. .. per lb.	0	0	3
,, =24° .. .. ,,	0	0	1¾
,, Carbonate .. .. nett ,,	0	0	3¼
,, Muriate .. .. per ton	21	0	0
,, ,, (sal-ammoniac) 1st & 2nd .. per cwt.	35/- & 33/-		
,, Nitrate .. .. per ton	40	0	0
,, Phosphate .. .. per lb.	0	0	10½
,, Sulphate (grey), London .. .. .. per ton	10	3	9
,, ,, (grey), Hull .. .. ,,	10	2	6
Aniline Oil (pure .. .. per lb.	0	0	7
Aniline Salt ,, ... ,,	0	0	6½
Antimony .. .. per ton	45	10	0
,, (tartar emetic) .. .. per lb.	0	1	0
,, (golden sulphide) .. .. ,,	0	0	10
Barium Chloride .. .. per ton	7	10	0
,, Carbonate (native) .. .. ,,	3	10	0
,, Sulphate (native levigated) .. .. .. ,,	45/- to 75/-		
Bleaching Powder, 35 % .. .. nett ,,	7	10	0
,, Liquor, 7 % .. .. ,,	2	10	0
Bisulphide of Carbon .. .. ,,	11	15	0
Chromium Acetate (crystal .. .. per lb.	0	0	6
Calcium Chloride .. .. per ton	2	5	0
China Clay (at Runcorn) in bulk .. .. .. ,,	17/6 to 35/-		
Coal Tar Dyes:—			
Alizarine (artificial) 20 % .. .. per lb.	0	0	8¼
Magenta .. .. ,,	0	3	9
Coal Tar Products			
Anthracene, 30 % A, f.o.b. London .. per unit per cwt.	0	1	2½
Benzol, 90 % nominal .. .. .. per gallon	0	1	7
,, 50/90 ,, ... ,,	0	1	3
Carbolic Acid (crystallised 40°) .. .. .. per lb.	0	0	4⅞
,, (crude 60°) .. .. per gallon	0	1	2
Creosote (ordinary) .. .. ,,	0	0	1
,, (filtered for Lucigen light) .. .. ,,	0	0	2
Crude Naphtha 30 % @ 120° C. .. .. .. ,,	0	0	9
Grease Oils, 22° Tw. .. .. per ton	2	2	0
Pitch, f.o.b. Liverpool or Garston .. .. .. ,,	1	14	0
Solvent Naphtha, 90 % at 160° .. .. .. per gallon	0	0	11
Coke-oven Oils (crude) .. .. ,,	0	0	3
Copper .. .. per ton	45	10	0
,, Sulphate .. .. ,,	15	10	0
,, Oxide (copper scales) .. .. ,,	45	0	0
Glycerine (crude) .. .. ,,	13	0	0
,, (distilled S.G. 1250°) .. .. ,,	45	0	0
Iodine .. .. nett, per oz.	0	0	9
Iron Sulphate (copperas) .. .. per ton	1	12	6
,, Sulphide (antimony slag) .. .. ,,	2	0	0
Lead (sheet) for cash .. .. ,,	12	0	0
,, Litharge Flake (ex ship) .. .. ,,	14	5	0
,, Acetate (white ,,) .. .. ,,	25	10	0
,, ,, (brown ,,) .. .. ,,	17	10	0
,, Carbonate (white lead) pure .. .. .. ,,	20	0	0
Nitrate .. .. ,,	20	5	0

	£	s.	d.
Lime, Acetate (brown) .. .. per ton	5	17	6
,, ,, (grey) .. .. ,,	10	5	0
Magnesium (ribbon and wire) .. .. per oz.	0	2	3
,, Chloride (ex ship) .. .. per ton	2	7	6
,, Carbonate .. .. per cwt.	1	17	6
,, Hydrate .. .. per ton.	17	0	0
,, Sulphate (Epsom Salts) .. .. .. per ton	2	19	0
Manganese, Sulphate .. .. ,,	17	15	0
,, Borate .. .. per cwt.	2	15	0
,, Ore, 70 % .. .. per ton	4	5	0
Methylated Spirit, 61° O.P. .. .. per gallon	0	2	6
Naphtha (Wood), Solvent .. .. ,,	0	4	6
,, ,, Miscible, 60° O.P. .. .. .. ,,	0	4	6
Oils:—			
Cotton-seed .. .. per ton	19	10	0
Linseed .. .. ,,	20	0	0
Lubricating, Scotch, 890°—895° .. .. ,,	7	5	0
Petroleum, Russian .. .. per gallon	0	0	4½
,, American .. .. ,,	0	0	5½
Potassium (metal) .. .. per oz.	0	3	7
,, Bichromate .. .. per lb.	0	0	3¼
,, Carbonate, 90% (ex ship) .. .. .. per ton	18	0	0
,, Chlorate .. .. per lb.	0	0	7
,, Cyanide, 98% .. .. ,,	0	2	2
,, Hydrate (Caustic Potash) 80/85 % .. per ton	22	10	0
,, ,, (Caustic Potash) 75/80 % .. ,,	21	0	0
,, ,, (Caustic Potash) 70/75 % .. ,,	20	15	0
,, Nitrate (refined) .. .. per cwt.	1	2	6
,, Permanganate .. .. per cwt.	3	10	0
,, Prussiate Yellow .. .. per lb.	0	0	10
,, Sulphate, 90 % (ex ship) .. .. .. per ton	9	15	0
,, Muriate, 80 % (do.) .. .. .. ,,	7	17	6
Silver (metal) .. .. per oz.	0	3	3½
,, Nitrate .. .. ,,	0	2	10
Sodium (metal) .. .. per lb.	0	3	4
,, Carb. (refined Soda-ash) 48 % .. nett per ton	6	2	6
,, ,, (Caustic Soda-ash) 48 % . ,, ,,	5	5	0
,, ,, (Carb. Soda-ash) 48% .. .. ,, ,,	5	7	6
,, ,, (Carb. Soda-ash) 58 % .. .. ,, ,,	6	5	0
,, ,, (Soda Crystals) .. .. .. ,, ,,	3	9	0
,, Acetate (ex-ship) .. .. ,,	16	10	0
,, Arseniate, 45 % .. .. ,,	10	10	0
,, Chlorate .. .. per lb.	0	0	8
,, Borate (Borax) .. .. nett, per ton.	29	10	0
,, Bichromate .. .. per lb.	0	0	2¼
,, Hydrate (77 % Caustic Soda) (f.o.b.) nett pr. ton	11	10	0
,, ,, (74 % Caustic Soda) ,, ,, ,,	11	10	0
,, ,, (70 % Caustic Soda) ,, ,, ,,	10	10	0
,, ,, (60 % Caustic Soda) .. ,, ,,	9	7	6
,, ,, (60 % Caustic Soda, cream) (f.o.b.) ,,	9	2	6
,, Bicarbonate .. .. ,,	6	12	6
,, Hyposulphite .. .. ,,	7	15	0
,, Manganate, 25% .. .. ,,	11	10	0
,, Nitrate (95 %) ex-ship Liverpool .. .. per cwt.	0	8	9
,, Nitrite, 98 % .. .. per ton	30	0	0
,, Phosphate .. .. ,,	15	10	0
,, Prussiate .. .. per lb.	0	0	7¼
,, Silicate (glass) .. .. per ton	5	7	6
,, ,, (liquid, 100° Tw.) .. .. .. ,,	4	5	0
,, Stannate, 40 % .. .. per cwt.	3	5	0
,, Sulphate (Salt-cake) .. .. per ton.	1	17	6
,, ,, (Glauber's Salts) .. .. ,,	1	15	6
,, Sulphide .. .. ,,	7	15	0
,, Sulphite .. .. ,,	6	12	6
Strontium Hydrate, 100% .. .. ,,	8	10	0
Sulphocyanide Ammonium, 95% .. .. per lb.	0	0	7½
,, Barium, 95 % .. .. ,,	0	0	5
,, Potassium .. .. ,,	0	0	7½
Sulphur (Flowers) .. .. per ton.	10	0	0
,, (Roll Brimstone) .. .. ,,	7	10	0
,, Brimstone: Best Quality (nominal) .. .. ,,	5	5	0
Superphosphate of Lime (26 %) .. .. ,,	2	7	6
Tallow .. .. ,,	26	10	0
Tin (English Ingots) .. .. ,,	97	0	0
,, Crystals .. .. per lb.	0	0	6¾
Zinc (Spelter) .. .. per ton	22	10	0
,, Chloride (solution, 96° Tw.) .. .. .. ,,	6	10	0

THE

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CURRENT TOPICS.

LICENCES FOR SULPHATE STILLS.

FOR some time past, tar distillers and those who engage in the recovery of ammonia as sulphate from gas liquors have been troubled with the claim made by the Inland Revenue inspectors, that sulphate stills were liable to taxation on account of their falling within the same category as Coffey's still, which is used for making alcohol.

There are two weak points in such an argument, namely, the impossibility of producing a palatable spirit by means of the plant which comprises a sulphate plant, without the addition of a condensing worm in some shape or form; and, secondly, the culpable negligence which is displayed in allowing such a still to have been in general use in all parts of this country for about 20 years, without having discovered that it was capable of being used to defraud the Government.

As a matter of fact, however, it cannot successfully be applied to such a purpose, which perhaps will account for the Excise authorities having been so long in finding out the use to which it is now stated a sulphate plant can be put other than its legitimate one. In another column we give an account of the recent proceedings against the Sunderland Gas Company, from which it will be seen that the case was dismissed, a similar decision being made in the case of Mr. Illingworth some months since. It is hoped, however, that this time, as the decision is again to be appealed against nothing untoward may occur to prevent the matter being carried to its finality, in regard to which the Association of Sulphate of Ammonia Makers of Great Britain holds very definite opinions, being determined to have the matter thoroughly thrashed out, and settled one way or the other, a procedure which it will be most interesting to follow to the end.

MANUFACTURERS AND THE JOINT RIVERS COMMITTEE.

An important advance towards effecting the prevention of further pollution of the rivers Irwell and Mersey was made at the special meeting of the Joint Committee on Monday last. A deputation representing all the chief industries of the Manchester district met the committee with a view to effecting certain changes in the bill which is to be promoted in Parliament during the current session.

One important amendment was that the bill should be divided into three parts for the treatment of solids, sewage, and liquid pollution, the adoption of which the Committee expressed their willingness to accept at once.

It could hardly be expected, however, that the request that Prof. Roscoe's preliminary report should be incorporated in the schedule to the bill would be complied with, since the Committee were not very likely to bind themselves to a report which was obviously and expressly stated to be of a preliminary nature. Calico printers and bleachers both had their peculiar requests conceded, the former of the two in

regard to innocuous colouring matter, being a point which does not appear to be expressly referred to in the bill, although it is essential to the interests of manufacturers that it should be. Again, the clause giving the Committee power to acquire land for filtration should strengthen the hands of manufacturers considerably. Altogether, the meeting was of a most satisfactory nature, and was a practical demonstration of the conciliatory, though determined, attitude which the Committee has assumed from the beginning, by means of which it was hoped to overcome the opposition of manufacturers in regard to enforcing the prevention of pollution, a conquest which the policy adopted has apparently in a large measure succeeded in making, since the manufacturing representatives expressed their desire to support the bill.

SOCIETY OF CHEMICAL INDUSTRY.

LONDON SECTION.

A MEETING was held on May 2nd, at which Pro. Ramsey read a paper by himself and Mr. J. C. Chorley on "The distillation of wood." The communication being one which dealt with a number of tabulated details rather than general conclusions, was wisely given in abstract form. Pro. Ramsey remarked that although wood had been distilled for at least 100 years, yet but little had been done to investigate the precise character of the reactions which went on, and the nature of the products which were obtained. Of the main products of distillation, which were water, acetic acid, methyl alcohol, and wood creosote, and charcoal left as a residue in the retort, the first was of course valueless, the next two largely utilised, while the creosote, with the exception of a little which was purified for dentists' use, was not generally considered of much account; the utilisation of the charcoal depended upon the kind of wood that had been employed. That from oak and beech was consumed in the foundry, while charcoal from willow and alder was preferred for the manufacture of gunpowder. After recounting the numerous substances which accompanied the main products, Pro. Ramsey pointed out that our knowledge of what was going on in the interior of the retort was necessarily very limited, as the temperature could not be accurately ascertained. In order to investigate the phenomena of distillation more closely, a small-size apparatus had been devised, consisting of a flask in which the wood was distilled, surrounded by a triple air jacket and provided with a thermometer, connected with condensing and receiving vessels the further end of which was coupled to a gas-holder. A connection was made to a water pump so that at the beginning of the experiment a fair vacuum could be obtained throughout the apparatus, and thus the true amount of permanent gases yielded by the wood determined. The method adopted for estimating the methyl alcohol, though confessedly crude, was in the authors' opinion the best that was applicable under the circumstances. It consisted essentially in oxidising that portion of the distillate containing the alcohol with potassium bichromate and sulphuric acid, and determining the carbonic acid given off. Some light was thrown on the degree of reliability of this method by the fact that the amount of methyl alcohol recorded as being obtained from different woods varied enormously, a result which was not confirmed by the yield on the large scale, the variations under manufacturing conditions being it is true in the same direction as those in the laboratory apparatus, but showing smaller and less violent fluctuations. Strictly speaking therefore it was necessary to consider the results obtained by this method as indicating the amount of "oxidisable matter calculated as methyl alcohol," rather than to assume that they represented methyl alcohol itself. The change that went on during the distillation of wood became exothermic at a certain point.

The stage being marked by a sudden evolution of gas, without additional or more vigorous firing. On account of the occurrence of this exothermic change, the authors ventured on the somewhat paradoxical course of regarding wood as an explosive. The yield of acetic acid was remarkably constant even with different woods, and its evolution might be taken to start from the time when the wood, in the authors' phrase, "begins to explode" and to cease with the explosion. Furfural was similarly a product of "explosion." The products from the distillation of wood varied not only with the nature of the wood but with its place of origin and state of seasoning. A smaller yield of acetic acid was obtained with wet wood. In the discussion which followed, Mr. Blount took exception to the use of the word "explosion" for a change of this character, and characterised it as an abuse of terms. Mr. C. F. Cross spoke of analogous changes such as occur in the formation of ensilage from grass, and pointed out that th lation of cellulose itself from various sources would be likely suggestive resu'ts. Mr. Watson Smith, speaking as an ol distiller, said that it did not appear that any severe rise of tem took place during distillation. It was true that when the char drawn it might take fire, but this might well be due to the co tion of air in its pores. Mr. A. G. Green pointed out that satisfactory method of estimating methyl alcohol than that d might easily have been used. Mr. Biggs complained of the att the Inland Revenue authorities towards the producers of alcohol. One at least was induced to experiment in order to pure product, and when success had been attained, was co with the fact that the full duty would be levied upon the spirit of its potability. Professor Ramsey, in reply, defended the us term "explosive," and intimated that he was prepared to deno substances and reactions not usually thus included by that term.

On account of the interest that had been aroused in the f paper, but little time was unfortunately left for a note by Dr. R the composition of some Indian gums of known origin. He h enabled to examine some 14 or 15 samples obtained from a sources of known botanical species, and determine some of th perties in a manner similar to that adopted by himself and Mr on a recent occasion. After the chairman, Mr. T. Tyr expressed the sense of the meeting of the value of work of this filling some of the too numerous gaps in our knowledge, the shortly adjourned.

THE POLLUTION OF THE MERSEY A IRWELL.

A SPECIAL meeting of the Mersey and Irwell Joint Commi held on Monday afternoon at the offices of the Commit Mosley-street, Mr. J. T. Hibbert presiding, for the purpos cussing with representatives of the manufacturers, bleachers printers, dyers, colliery owners, &c., in the watershed, the ments which are proposed to the bill to be promoted in Pa during the current session.

The Chairman, in opening the proceedings, stated that the ments prepared by the Joint Committee had been forwarde representatives of the various manufacturing interests. The ments the manufacturers and others proposed had been conside meeting that morning. In the first place he thought it right that the Committee could not accept the first amendment prop the manufacturers, &c., viz.: that Sir Henry Roscoe's prel report should be embodied in the schedule to the bill. It was from the term of that report that it was preliminary only; and regard to the great advances that were being made in chemica ledge, it would be unreasonable to ask the committee to bind the to what was contained in the report. They were prepared to a once the proposal that the bill should be divided into thre dealing respectively with solids, sewage, and liquid pollution other amendments appeared to be more or less of a verbal ch and could be discussed later on. He desired, further, to stat special clause enabling the Joint Committee to acquire land h inserted.

A long discussion followed, in the course of which the Co accepted a suggestion of the calico printers that the term "pol should not include "innocuous discolouration." The Commit complied with suggestions from the manufacturers, bleachers, favour of clauses being inserted in the bill giving them certain tion in addition to that given in the original draft of the bill favour of the insertion of additional amendments with regar courts of summary jurisdiction. Certain concessions were also to the representatives of the Lancashire and Cheshire Coal Ass The deputations were so well satisfied with the result of the aft work that they indicated their desire to support the bill.

The Chairman said he was glad to find that those whom the tions represented were not unfriendly to the desire of the Comm improve the state of the rivers. He hoped the manufacturers Committee might work amicably together, and that there m little, if any, necessity to appeal to the courts to enforce the la believed that in the long run the work in which they were would result to the advantage not only of the people livin watershed, but of the manufacturers themselves.

ROYTON SEWAGE WORKS.—A Local Government Board was recently held at Royton for sanction to borrow £28,000 fo sewage disposal works, polarite filters, refuse destructors, an works connected therewith, from designs prepared by Mr. T McCallum, C.E. No opposition to the scheme was made.

OSPHATES OF POTASH AND AMMONIUM AS FERTILIZERS.

By Dr. T. Meyer.

IESE two commercial products, still but little known, do not consist entirely of potassium and ammonium phosphates, but ain a small quantity of sulphuric acid, which is also found in most ral fertilizers. I started the preparation of the former five years and it is now made on the large scale.

ie phosphates of potassium and ammonium are, according to their position, simple products formed by the action of phosphoric acid ie corresponding sulphates, and their mode of preparation may be sented by the following equation :—

$$K_2SO_4+H_3PO_4=KHSO_4+KH_2PO_4$$

may be mentioned here that this reaction does not take place een sodium sulphate and phosphoric acid, at all events under ary circumstances. Experiments made upon this point have ys yielded an oily deliquescent mass, simply a mixture of sulphate phosphoric acid.

ese salts contain 25% of phosphoric acid and 25% and 10% ctively of potassium and nitrogen. In addition to water, com- d or otherwise, about 30% of sulphuric acid is present, as well as a per cent. of ordinary impurities, lime, oxide of iron, alumina, nesia, hydrofluoric acid, &c. They only contain traces of chlorine, the potassium and ammonia are not combined entirely with the phoric but also in part with the sulphuric acid. It is nevertheless rent that the quantity of sulphuric acid introduced to no useful ose into the soil is much greater in the case of superphosphate of onia than of sulphophosphate of ammonia. The former of these is ixture of ammonium sulphate, calcium phosphate, and gypsum, e the latter may be considered as a mixture of ammonium sulphate free phosphoric acid. The distinguishing point about these salts heir acid character, which produces the following series of erties.

Great solubility in water.—The salts composing these fertilizers olve readily in water, leaving only a faint residue of phosphates of and aluminium. They can therefore he applied like nitrate of as a top dressing as well as when the soil is poor in nutritive ients, a state of things which is only rendered evident by the weakly earance of the plants.

Ready admixture with lime and Thomas meal without loss of phoric acid and ammonia.—It is well known to agriculturists that mas meal on account of the caustic alkali which it contains, sets ammonia when brought into contact with neutral salts of ammonium with ammoniacal organic compounds, such as manure.

he presence of lime and a large proportion of ferric oxide transforms soluble phosphoric acid of superphosphate into insoluble acid. re is no danger of losses of this kind when Thomas slag is used the sulphophosphates of which we are speaking; but on the other d, a part of the phosphoric acid of the slag is rendered soluble.

xperiments on the way in which these salts behave as compared mixtures of slag and superphosphates have given the following lts :—On 100 parts of soluble phosphoric acid or nitrogen employed e were found :

mixture composed as follows :—	After standing for	With phos of ammonia 10·24%N 25·56% phos. acid.		With phos. of pot. 21·57% 25·32% soluble phos. acid.	With superphos. 15·75% of soluble phos. acid.
		Nitrogen	Phos acid.		
gs. of slag.. of fine meal	670 days.	—	113·3	101·6	76·8
21% phos. cid	13 ,,	99·6	113·2	——	26·6
of lime with 3·56grms. of hos. acid oluble in ater	32 ,,	99·6	111·7	100·4	——

t will be observed that phosphate mixed with slag retrogrades very idly, since at the end of 13 days only 26·6% of the original weight soluble phosphoric acid is present; with phosphate of potassium on other hand, there is no loss, but a slight gain (100·4%), whilst with monium phosphate a portion of the phosphoric acid of the slag is dered soluble, and far from any loss being experienced the amount reases to 111·7% in 32 days.

n order to manure a piece of land simultaneously with slag or careous fertilizers, sulphate of ammonium and superphosphate, it uld be necessary to work in each of these separately, which would atly increase the labour expenses.

On the other hand, slag can be applied along with sulphophosphate of ammonium without inconvenience. This mixture is particularly valuable in certain cases because a portion of its phosphoric acid dissolves rapidly, whilst the remainder only acts gradually as the plants develop.

3. *Rapid diffusion in the soil.*—In considering the way in which superphosphate and sulphophosphate respectively act in presence of Thomas slag, it appears probable that the soluble phosphoric acid of the sulphophosphates will be more rapidly disseminated in arable land than that of the superphosphate, submitted to the retrogressive action of compounds of lime, iron and alumina. Retrogression cannot, in fact, take place until the excess of acid has been saturated. This is why the phosphoric acid of the sulphophosphates should be more readily diffusible in heavy soil than the ordinary phosphoric acid of superphosphate.

I have also endeavoured to treat this question experimentally, but the results obtained hitherto are not conclusive. I do not, however, consider it useless to discuss them here, and so draw the attention of others to the point.

The difficulty of the investigation evidently consists in reproducing the conditions of fertilization as they actually exist in practice, when small quantities of phosphoric acid are used for an enormous mass of earth. I commenced by preparing solutions of salammoniac and mineral superphosphate containing about 5 grms. of phosphoric acid per litre; 25 c.c. of this aqueous extract were reserved for analysis. Another portion of 25 c.c. was diluted to 500 c.c. and digested for two hours in a litre flask with 100 grammes of calcareous earth, the whole being frequently shaken. The liquid was then filtered and 400 c.c. of the filtrate corresponding to 20 c.c. of the original solution precipitated with ammonium molybdate.

In this way the following results were obtained :

	Sulphophosphates of Ammonium.	Mineral Superphosphate.
In 20 c.c. of solution employed..	0·0992 gr. phos. acid	0·0959 gm.
In 20 c.c. after treating with earth	0·0791	0·0725
Percentage of phosphoric acid rendered insoluble by treatment.....	20·2	24·4

Finally, the strongly marked acid character of the two salts explains how it is possible, even with a crude phosphate containing much oxide of iron and alumina, to make a phosphatic manure only containing small quantities of phosphate insoluble in water. I have thus succeeded, only upon the laboratory scale it is true, in preparing a sulpho-phosphate of potassium containing, in round numbers, 14% of soluble and 15·5% of total phosphoric acid from Nevassa phosphate, which is particularly rich in compounds of iron and aluminium. This salt was not oily, but had the consistency of a normal superphosphate. Special emphasis must be laid upon the fact that these salts are not hygroscopic, but as dry and pulverulent as superphosphates in general. At the commencement difficulties were encountered in this respect, but they were long ago overcome.

I must add that in the sulphophosphates of potassium and ammonium the phosphoric acid, the nitrogen and the potash have a high fertilising value, whilst their price is not much higher than that of simple mixtures of superphosphate, ammonium sulphate and potassium sulphate.

It is true that in the sulphophosphates half the base is combined with phosphoric acid, but on the other hand, their characteristic properties give them a much greater value than mere mixtures of these salts. Thanks to the absence of injurious material (compounds containing chlorine) they are suitable for the cultivation of tobacco, the vine, etc. Their great solubility in water fits them for use as a top dressing, their acid properties render them valuable for mixing with other fertilizers, and finally their great concentration means a great saving in carriage, when they are sent to places at a distance from the works.—*L'Engrais.*

WHAT CONSTITUTES A STILL ?

DURING the last few months an attempt has been made by the Inland Revenue authorities to exact from gas companies and chemical manufacturers a duty for every plant worked by them for the production of sulphate of ammonia. The contention of the Crown is that this plant is a still within the meaning of the Act of Parliament passed in 1846, which imposed an annual duty upon every person using a still. The first case that was taken was one against Mr. Illingworth, a chemical manufacturer carrying on business at North Dean, near Halifax. The case came before the West Riding justices at Halifax, and, as reported at the time in these columns, was dismissed. The Crown thereupon appealed to the Queen's Bench, but unfortunately

Mr. Illingworth died two days before the case came on for hearing, and the appeal necessarily fell through. The authorities determined, however, not to let the matter drop, and the next case they took was against the Sunderland Gas Company, who have two plants for the manufacture of sulphate of ammonia, one of these being the well-known patent process of Mr. George E. Davis, and this was the one which the Revenue authorities eventually decided to proceed upon. The facts were then laid by the gas company before the Association of Sulphate of Ammonia Manufactures, and they determined to fight the case, which came on for hearing on Friday last week, before a bench of Sunderland magistrates, namely Dr. Potts, Mr. Simey, and Mr. Sanderson. The Crown was again represented by Mr. Alpe, barrister, from Somerset House, whilst Mr. Evans (Godfrey Rhodes and Evans), Halifax, appeared on behalf of the gas company. Mr. Steele, superintendent inspector, and Mr. Lewin, analytical chemist, of Somerset House, gave evidence that the plant in question was a still, alleging that it was clearly an imitation of the well-known Coffey's still, so largely used for the distillation of spirits in this country. They were cross-examined at considerable length, and admitted that whereas in Coffey's still the whole process was physical, in the plant at the gasworks the process was almost entirely of a chemical character, and further, that Coffey's still contained a condensing apparatus which was entirely absent from the plant in question, and that an essential ingredient in the working of Coffey's still was the application of cold to a heated gas, but that in the present plant every thing that could be devised was done to keep the the heat in and prevent the application of cold. Mr. Evans addressed the Bench at length, and contended that as the ammonia-sulphate plant had been known for at least thirty years, it was idle on the part of the Crown now to seek to impose a tax which was never intended to apply to plant such as this, which was used purely for manufacturing purposes; and seeing that the Revenue authorities had known of the sulphate apparatus for so many years, they had either been guilty of great neglect in not recovering the duty before or, which he contended was the correct explanation, they had considered in past years that this apparatus was not a still within the meaning of the Public Analyst Act. Mr. Willam Ackroyd was called, and gave his emphatic opinion that this was not a still. The apparatus was without several parts necessary in a distilling plant, *e.g.*, there was no worm. In the ammonia vapour pipe there was a fall of about 1 in 40 towards the upright vessel where the gas was generated, for distillation purposes the fall ought to be in the opposite direction. If such a plant were used for distilling alcohol the small amount condensed in the saturator would be contaminated with lead and unfit for drinking. Cross-examined by Mr. Alpe: A small amount of alcohol might get over into the saturator if the apparatus were used for distilling, but distillation with it could never be a commercial success. He was aware that the distillate could be used for other purposes than drinking.

After a lengthy hearing the Bench dismissed the case. It is stated that the decision will be appealed against.

THE "INDIA" AIR PURIFIER.

THE latest suggestion for maintaining the atmosphere of rooms, offices, &c., in a state of purity, is that of Professor Neugebauer, who employs a very neatly-got-up tablet, held in a cardboard frame, so that it can be hung near the ceiling. The tablet is composed of a compound of carbolic acid, naphthalene and other powerful deodorisers of this kind. When hung in the room it gives off a pleasant smell, which prevents the stuffy smell which so often prevails in offices and closed rooms. We can speak from personal experience in this matter, as a tablet has been used in our offices with a marked improvement in the atmosphere of the same.

One great advantage appertaining to this method of disinfecting rooms is that it entails no trouble. The tablet must be hung near the ceiling, and is therefore out of the reach of children; and it requires no attention—gradually evaporating into the air. It is also a most convenient and cleanly deodorizer, and at the same time cheap, for one of the tablets, which costs a shilling, is guaranteed to last at least six months.

For sickrooms, lavatories, kitchens, sculleries, butchers' shops and such like places, these tablets will be found most suitable for reasons which are obvious in view of the foregoing remarks, and particularly so since they are safe. These tablets are produced in Germany in the laboratory of Professor Neugebauer, but may be obtained in this country from Professor Neugebauer's Air Purifying Syndicate, Ltd., 2, Pancras Lane, London; and certainly we recommend all those interested in sanitation and hygiene to try one of these tablets as a means of freshening and purifying rooms where the ventilation is defective.

THE LABOUR COMMISSION.

THE CHEMICAL SECTION.

COMMITTEE C of the Labour Commission resumed its sittings on Tuesday last, under the presidency of Mr. A. J. Mundella, M.P. Mr. G. Mitchell, secretary of the Labour Literature Society, Glasgow, and formerly employed in the Scotch chemical industry, examined by the Chairman, said that from 1,000 to 1,300 workers were employed in the industry. He had not been employed as a worker for the last ten months, but had been requested to speak on behalf of about 250 men engaged on the Clyde Bank. He thought there ought to be a legal restriction of the number of hours, which at present were twelve per day, including meal time. These, he said, should be reduced to eight as a maximum, and in some cases where the labour was particularly conducive to disease to six. He was also in favour of a better system of inspection and sanitation. Work in the salt-cake department was very injurious to health. He had never known a case of a man who had worked for two years continuously, whose teeth had not become black and then fallen out. The work was such that the men were generally in tatters, not being able to provide themselves with proper clothes. In the bleaching department the workers had, he asserted, to take an emetic in the form of rum to prevent injuries ensuing to their chests. At the end of ten years a man might be considered to be worn out. Mr. T. Steel, from Tyneside, gave confirmation to many of Mr. Mitchell's statements. He declared that the salt-cake business affected not only the teeth but the chest, lungs, and digestive organs. Exhausted men were tempted to drink, and there crept in another evil. Whisky on draught at the factory was not unknown. The workman temporarily knocked out of time had only to get an order from the foreman and a tonic of whisky was supplied to him Sanitation might be made to accomplish a great deal. He had proved the power of unionism to benefit men. It had secured eight hours in every factory, bar one. The eight hours men earned practically the same wages as the men who worked twelve hours. Mr. G. Greig and Mr. J. Shotton, of the Tyneside whitehead industry, next gave evidence. The former mainly complained of the lack of ventilation; but Shotton, who came from Newcastle, said the women employed in the factory came up before the doctors every week for examination. Whitelead induced paralysis of the limbs, and they went week by week "to see whether their legs are affected" Many of them were married women. Yet if a woman became affected and was away for some months no provision was made for her. Men were liable to the same miseries. Mr. Shotton had himself been laid up for fourteen weeks with weakness in the legs. But although the manufacture of whitelead was a dangerous employment, the wages were no higher than in healthy businesses, and a man becoming incapacitated had, after a term of free doctoring, "nothing to look to." A considerable proportion of them became chargeable to the rates. Mr. J. George, who spoke for the acid workers of South Wales, advocated the abolition of Sunday work and the shortening of the long spells of work. They also had their afflictions, the acid invariably attacking the worker's chest, and bringing on bronchial attacks. The Commission again adjourned.

THE INSURANCE OF BOILERS.

AT the inquiry held last week upon the boiler explosion which took place at the Hill Mill Bleach Works, Halliwell, near Bolton, on the 4th of April last, the Board of Trade Commissioners in delivering their judgment touched upon several points, which involve important considerations for steam users and for all insurance companies that undertake the inspection of boilers.. The boiler in question was made in 1874 by Messrs. Musgrave, and was sold to Messrs. Murton and Company, of the Hill Mill Bleach Works, Halliwell. It was of the ordinary Lancashire type, fitted with two flues, and constructed to resist a pressure of 70lb. to the square inch. The boiler was insured with the company above-mentioned for £1,800., the annual premium being £5., and it was thoroughly inspected once a year by a trained inspector in the insurance company's service. Each time the boiler was examined it was found to be in good working order so far as could be seen. Mr. Murton stated that he insured the boiler for the purpose of having it periodically examined by competent inspectors of the insurance company, and in order that he might be certain that he was working the boiler under safe conditions. He relied on the reports received from time to time, and did not consider it necessary to employ an engineer, a skilled mechanic, to make independent examinations. There was no question that the inspectors employed by the insurance company were fully competent for their work, nor that Mr. Murton was right in trusting to them. Mr. Murton was therefore acquitted of all blame as regarded the explosion. The point at issue was whether or not the inspector, and the insuring company acting on his representations, was right in reporting the boiler safe

s a matter of fact, he had not examined every part of it. This Lancashire boiler of an old type, there was a narrow water me five inches wide extending along the longitudinal seams, e could not get at. Scale was there, but this, in the opinion of ector, supported by Mr. Crossland and Mr. Hartley (assistant to the company), it was impossible to remove by ordinary or could anyone ascertain by eye or hand the condition of the that point. Mr. Woodthorpe, engineer surveyor to the Board , agreed that this was the case, but added that he would, ch circumstances, have had the plates drilled and the boiler l to hydraulic pressure. Mr. Crossland, on the other hand, d that hydraulic tests were not absolutely reliable, and that he plates would not, in a case of this kind, have put the con- the boiler beyond question. Moreover, what might suggest n inspector going to a boiler for the first time, would not occur pector who was familiar with it, and who found in all the parts e that the shell and joints were sound. Mr. Crossland stated e were scores of boilers which could not be thoroughly l in the sense that all their parts were accessible to the eye or , and that it would be too much to require owners on each examination to have all parts made accessible to the inspector. time the boiler was examined internally and externally was in 91, and on the 20th of that month a letter, signed by Mr. l, was sent to Messrs. Murton, stating how the boiler was d adding, "No further defects were observed, and the con- f the boiler is otherwise stated to be satisfactory." Mr. egarded this as a certificate from the insurance company that r was safe for another year, and Mr. Crossland admitted that distinct expression of opinion on the company's part that the s safe until the next examination, which was to have taken the month that the explosion occurred. In answering the put by Mr. Gough as to whether the parties to the inquiry l rightly, the Commissioners held that Mr. Murton was in no lame. They thought he took efficient measures to ascertain ler was in working condition; they saw no reason why the a boiler should not rely on the inspection made by a qualified of an insurance company as much as on an inspection made ualified man in his employ. The Commissioners, however, ful to point out that in their opinion no steam user could alter position towards the public or his employés by arranging for n by an insurance company, and that he was as liable for the act of insurance companies' inspectors as he would be for ie of his own servants. They found that Mr. Inskeep was to not having, when ordinary means failed to reveal the con- the seams, resorted to the method of drilling or the hydraulic oth. It had been stated, they said, that except on very ions inspectors did not drill plates, that such a proceeding l a boiler, and that owners objected to have to fill up the s. They thought, however, that owners, assured though they uld have much stronger objections to their boilers exploding vant of drilling. Of course, it could be said that it was very e wise after the event, but they had no doubt that the inspector, at he could not examine the boiler completely in the ordinary ht to have had recourse to drilling and the hydraulic test. oing this they thought Mr. Inskeep was to blame for the ex- and that for his conduct the Boiler Insurance and Steam mpany must be held responsible. Apart from the conduct of ector the company were to blame, for Mr. Crossland had that he knew parts of the boiler had not been examined; or, ords, that he was not deceived by the reports of his inspector. reasons the Court found Mr. Inskeep to blame, and also, with et, the Boiler Insurance and Steam Power Company, Limited, siness on many other occasions they had found to be most and properly conducted with regard to the examination of Mr. Gough applied that under section 7 of the Boiler Ex- Act, 1882, the Court would order the company to pay the costs nses of the investigation. Mr. Crossland said it was not a of costs with him, but of endeavouring to do all he possibly he benefit of the public. He was sorry to hear the declarations urt that drilling and the hydraulic test would have revealed the of this boiler, because he did not think that was certain. re cases every day of boilers that would stand a hydraulic test as not safe to work them. The company were extremely anxious r duty, but there were thousands of boilers being constantly , large portions of which were not seen and could never be fulfil the conditions of the judgment now given seemed to ible unless they were in each case to have a boiler stripped of and practically taken apart. The conditions seemed to be too ractical working. The Court made an order (Mr. Crossland ing) for the Company to pay the sum of £50. towards the investigation. Mr. Howard Smith expressed the hope that it be thought that this investigation reflected on the conduct of any. Inspectors had made mistakes before and probably ain, and the company whose inspectors made the fewest n the best reputation.

THE POLLUTION OF RIVERS AND THE SHIP CANAL.

AT the last meeting of the Lancashire County Council in the report of the Medical Officer of Health to the Public Health Committee, the following paragraph occurred:—

During the quarter I have been much engaged with an inquiry relating to the pollutions of the Irwell and Medlock and other tributaries of the Mersey. I have also inspected the Manchester Ship Canal, which will eventually draw its chief water supply from those rivers. The magnitude of the danger which may arise from the retention of impure water cannot be over estimated, and it is very satisfactory to know that great energy is displayed by the Mersey and Irwell Watershed Board to minimise the nuisance caused by the trade refuse and sewage which at the present time pollute the rivers to such a grievous extent. In some cases sanitary authorities unblushingly turn their raw sewage directly into the streams, while others go to the expense of constructing sewage works which are only used on special occasions. During the night, and frequently for days together, the sewage, without undergoing any treatment whatever, is allowed to find its way through these works to a convenient stream. Nuisance from this source is far too common, and it is unfortunate that large towns should condescend to a form of fraudulent pollution. Sewage farms are not altogether free from blame, for sanitary authorities frequently sub-let such farms, and as profit has to be made by the tenant, it is easy to understand that the sewage is only used at certain times of the year, and the character of crop is selected by the farmer rather with an eye to profit than as to suitability for taking up sewage.

On February 6th, I found one of the Westhoughton sewage farms, an example of the evil conditions mentioned. It was also evident that the bulk of the sewage was allowed merely to flow over and render foul the land adjoining the brook which forms the southern boundary of the farm. The land most suitable for dealing with sewage, about 13 or 14 acres in extent, had not received sewage for twelve months, nor would it be used for that purpose until, as was stated, the "back end" of the year. The Dog Hole Farm, belonging to the Westhoughtou Local Board, seemed to be dea ing with sewage in a proper manner.

Dr. PILKINGTON, chairman of the Committee, said many members of the Council would be astonished to read that in this nineteenth century, in the centre of the wealthiest and most densely populated county of England, there were authorities which sent their filth directly into the streams, and that there were authorities who had constructed so-called sanitary buildings which were actually used as a "blind," for they were seldom or never used for the treatment of sewage. He was glad to see that the condition of the brooks of Lancashire was being better looked after. The Ship Canal of Manchester might have led to the formation of a gigantic cesspool, but he was happy to know that that undertaking had led to the formation of a joint committee, with whose assistance he hoped they would get rid of the present filthy conditions. They would bring all the pressure they could to bear on the sanitary authorites, and if that failed they would put in force the somewhat cumbrous machinery of the Local Government Board. He regretted they had not the power to deal more summarily with the conditions of disease in their midst.

Dr. WOOD hoped that something would be done, for the lives of the people were at stake.

The CHAIRMAN said he hoped the report would have a good effect on the authorities who provided means for dealing with sewage and did not use them. The Boards for the Ribble and the Mersey and Irwell must insist that the sewage matter was properly dealt with. (Hear, hear.)

THE UTILITY OF CHEMISTRY IN AGRICULTURE.

M. PETERMANN, the director of the Belgian scientific experiment station, has recently published a little work upon the analysis of soil, (the details of the method he employs having already appeared in these columns) in which he upholds the old idea that by a simple analysis the chemist could tell the farmer exactly what manure to put into the soil he cultivates for the production of certain crops. As M. Petermann says, the enthusiasm of the first hour has given place to disillusion, and he concludes by suggesting that the actual chemical analysis of a soil, conducted side by side, with the analysis of the plant, may produce happy results, the two methods of scientific investigation marching side by side, mutually controlling each other. It ought not to be necessary to point out that the chemist, who is supposed to be all-powerful in this matter, does not claim to be so skilful as many suppose. It has, however, been asked whether, samples of soil being taken from every field upon a given farm, a decided answer could be obtained from a chemist, and the tenant shown exactly what his soil was deficient in, what manures he requires,

and in what quantities, for the production of his future crops. A skilful chemist can undoubtedly be of very considerable service to a skilful farmer, but the farmer should be prepared by his own study of the subject to follow the directions of the chemist and personally assist in accomplishing the work. It is often stated in works upon agricultural science that such and such fertilising matters are in the soil in an unavailable condition. Unfortunately it is not within the power of the chemist to tell the farmer exactly what proportion is available and what is not. If he were able to do this he would be in a position to render very much more assistance than he can do at the present moment. When, however, we have still further advanced in the science of agriculture, and when the farmer will be able to consult and to obtain the personal help of agricultural chemists, much more good work will undoubtedly be done, for, as Ville puts it, the plant itself can be made to show what the soil requires, and if this question is asked of the plant by the farmer and of the soil by the chemist simultaneously, there is no doubt that the farmer will be in a position to control his work to a much greater extent than he is at the present time.

DETECTING MARGARINE IN BUTTER.

SEVERAL tests have been suggested for determining whether so-called butter is actually genuine, or falsified by the addition of margarine; and presumably on account of some of these tests being of a negative character, there is an opinion prevalent that scientists have not as yet succeeded in formulating a satisfactory method of detecting the presence of margarine as an adulterant.

Such an impression, however, is an erroneous one, the fallaciousness of which is clearly proved by the existence of a test as simple and efficient as that which we are about to describe.

This test was first suggested by Dr. Pennetier, who is the author of a standard work on adulteration, and has been used by him in the municipal laboratories at Rouen for over three years, its use having been attended with most satisfactory results. A small piece of the sample of butter which is to be tested is pressed between two thin slips of glass, and is examined under the microscope by polarized light on a strip of selenite. If the butter is pure or simply salted nothing extraordinary is noticeable, but if the sample contains a trace of margarine or butter substitute, beautiful stars having all the colours of the rainbow are at once discernable in the field of the microscope. This test is simplicity itself and as many as thirty assays of suspected butters can be made in a hour.

THE RAPID TESTING OF AGRICULTURAL PHOSPHATES.

MESSRS. CHARLES and E. DEISS have communicated the following process to the Industrial Society of Marseilles. Ten grammes of substance are treated with hot sulphuric acid, which converts the basic into acid or monobasic phosphates. The liquid is filtered and carbonate of soda added until there is an alkaline reaction. All the acid phosphates are decomposed. After boiling to remove carbonic acid which dissolves a little phosphate of lime, the liquid is filtered and the alkaline filtrate saturated with dilute sulphuric acid to convert the neutral or basic sodium phosphate into acid phosphate.

The solution is again boiled and allowed to cool, and two or three drops of methyl orange (Paisier No. 5), and some drops of phenol phthalein are added.

The liquid becomes pink from the action of the acid on the methyl orange. A standard solution of caustic soda is then added until the disappearance of the pink tint, the liquid being of a pale yellow shade. Normal caustic soda solution (31 grms. Na_2O per litre) is then added, until the red colouration of the phenol phthalein is produced. Each cubic centimetre of this solution required represents 1·47 of phosphoric acid.

The theory of this process is that methyl orange re-takes its yellow colour as soon as the sulphuric acid is saturated, acid phosphate of soda having no action upon it; as soon as the acid phosphate is converted into neutral, the phenol phthalein becomes coloured red, as observed by Joly, and hence the amount of phosphoric acid can easily be determined. To determine the absorbable phosphoric acid a second quantity of 10 grammes is treated with ammonium citrate or acetic acid, to remove the soluble phosphate, and then proceeding as before the amount of absorbable acid is got by difference.

By treating the precipitate produced by sodium carbonate with concentrated acetic acid, the soluble basic phosphate of lime is removed and the phosphoric acid present as phosphate of iron and aluminium can then be determined.

The determination of phosphoric acid by this means has the advantage, according to the authors, of possessing the rapidity and precision of an alkalimetric titration.—*L'Engrais.*

THE ESTIMATION OF PHOSPHORIC ACI MANURES.

A LARGE number of experiments have been made by Dr. upon the estimation of phosphoric acid in fertilising m by weighing the precipitate of phospho-molybdate, thrown d a solution containing ammonium citrate and nitric acid. A exhaustive inquiry into the effects of varying quantities of mol citrate and nitric acid upon the precipitation of the phosphoric was found that the following proportions were the best to 100 c.c. molybdate, 27 c.c. nitric acid, and 50 c.c. citrate. results obtained are given below :—

By magnesia mixture.	By weighing phospho-molybdate.	Differences.	Vol. HNO_3 (1 in 100) used for washing.	VOLUME OF Citrate of Ammoni'm	VOLUME OF HNO_3 SpGr. 1·20	VOLUME OF ma em
27·47	27·17	—0·30	350 c.c.	60 c.c.	27 c.c.	10
26·78	26·49	—0·29	,,	,,	,,	
23·94	23·85	—0·09	,,	,,	30 c.c.	
14·05	14·19	+0·14	,,	,,	,,	

It will be seen that these results are fairly close, but it rem see how the method will apply when the H_3PO_4 is present in smaller proportions. With this object dilute solutions wer ployed containing only one-fifth the amount of H_3PO_4 present former case. The following results were obtained :—

By magnesia mixture.	By weighing phospho-molybdate.	Differences.	Vol. HNO_3 (1 in 100) used for washing.	VOLUME OF Citrate of Ammoni'm	VOLUME OF HNO_3 SpGr. 1·2	VOLUME OF mol em
29·62	31·07	+1·45	200 c.c.	60 c.c.	30 c.c.	10
28·96	26·78	+2·03	,,	,,	,,	
26·78	27·73	+0·95	350 c.c.	,,	,,	

It is thus evident that the proportions of citrate and molybda ployed will have to be varied according to the amount of present, which means knowing practically the amount of H_3PO is in the sample prior to making the test. The final opinion Crispo is that this method is not to be recommended, his dedu having been drawn from some fifty experiments made under ever ceivable condition favourable to success, ending only in the u factory results given above.

COLOUR IN PLANT LIFE.

THOSE familiar with the growth of flowers know how essent is to the creation of colour. The most gaudy blooms ar most brilliant foliage if kept in the dark or over-shaded will b pale and almost white. This fact (according to the *Hortic Times*) shows the presence in the plant of some chemical agent is acted upon by the actinc rays. To some extent this chemi nature is understood by florists, who, by the use of ch manures and other means, strive to take the greatest tage of it. For instance, it is a common practice to mix alum an filings with the soil in which certain plants are grown in order to out special colours. The bluish-tinted hydrangea is the result treatment. Salts of iron, or sodium phosphate, added to the so the crimson of the pæony to violet, and produces blue hort According to Dr. Hansen, who has studied the subject very clos many years, there are only three distinct pigments to be found in t —setting aside the chlorophyll, which forms the green colouring in all plants. These colours are yellows, reds, and blues. T lows are mostly in combination with the plasmic sap, while the exist chiefly in solution in the cell sap. The yellow pigments f insoluble compound with fatty matters, and is termed lipoc Orange is formed by a denser deposit of the yellow, and the co the rind of an orange is identical with that found in many flowers. red in flowers is a single pigment soluble in water, and decolori alcohol; but capable of being restored by the addition of acids. chrome combined with this red pigment produces the scarlets an of poppies and of the hips of hawthorns; but the varying inte reds in roses, carnations, pæonies and other flowers depends presence of a greater or lesser quantity of acids. The blue and colours are also decolorised by alcohol, but reddened by acids. have already succeeded in producing a very large scale of colours in flowers, and there seems to be very good grounds for ing that it is possible so as to manipulate nature that she will p blossoms of every conceivable tint and hue.

Reports of Companies.

WINDING-UP ORDERS.

TILBURY PORTLAND CEMENT COMPANY (LIMITED).—A -up order having been made in this case on March 5th last, the y has submitted a statement of the company's affairs, showing s £8,081., of which £7,201. are unsecured, with estimated sets £1,361., and, as regards contributories, a deficiency of). From the observations of the Official Receiver and pro- liquidator (Mr. C. J. Stewart), it appears that the company istered in April, 1890, and was formed for the purpose of g from Mr. David Wilson his several letters patent for the cture of cement and other articles connected therewith. The capital of the company was £25,000. in 5,000 shares of £5. For the purpose of carrying on the business the company d a 50 years' lease of land at Grays, Essex, commencing May 91, and certain buildings and plant were erected thereon by the y, at a cost stated to be about £18,000. Under the lease the rable was £40. per annum, and the company were also under a t to take weekly from the lessors 360 tons of chalk at 1s. per d 180 tons of loam at 1s. 6d. per ton. Owing to various causes, pany were unable to continue taking the chalk and loam, and a about £300. has been made in respect of such default. The Receiver states that the books of the company have been ly kept. One balance-sheet was issued, made up to April 30th, hich showed that at that date upwards of £15,000. had been d in the erection of buildings and in the purchase of plant, ry, &c. According to the secretary, no trading was practically mmenced, and owing to the liabilities of the company, and the depression in the trade, the directors called an extraordinary meeting on February 23rd last, when a resolution was passed company should be wound up voluntarily, and that Mr. John the secretary, be appointed liquidator. A confirmatory meeting ed for March 9th, but, in the meantime, the compulsory winding- r was made. Prior to the presentation of the petition, execution n levied on the company's property at Grays, at the suit of a , who appears in the statement of affairs as fully secured in of his claim, £368., to satisfy which the sheriff has since pro- to sell under an order of the Court. Since the date of the -up order the mortgagee of the lessors obtained leave to re-enter he terms of the lease, but, upon the intervention of the Official r, supported by the company's bank, the re-entry was ordered ithout prejudice to the claim of the bank and the rights of the y in respect of machinery and plant, and the Court has ordered ist of the machinery and plant shall be taken, and the respective f all parties thereto determined. An account explaining the cy of £22,659. has been rendered

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SHAW AND POLE (LIMITED).—A winding-up order having been against this company on December 12th last, the Official Receiver . J. Stewart) now states that it is probable that, at the meetings reditors and contributories, Mr. B. D. Kershaw, the mortgagee ssion, will submit a scheme for reconstruction and for discharg- liabilities of the company. It appears that the company was in March, 1885, to acquire and work, on a more extensive an had previously been done, the silica, sand, and brick works, uarries, etc., then belonging to Messrs. Kershaw and Pole, at Penwyllt, South Wales. It is stated that the property at one longed to Mr. E. C. Pole and his father, and that in 1882 Mr. Kershaw acquired a half-interest in the business for £2,750. operty acquired by the company appears to have been inspected ourably reported upon by engineers. The nominal capital of npany was £20,000. The Official Receiver asserts that. for ime previously to the presentation of the petition, considerable ces appear to have arisen between Mr. C. S. Kershaw, the ng director, and the remaining members of the board as to the ement of the company's business. The insolvency of the com- attributed by Mr. C. S. Kershaw to lack of working capital and n trading, and also, in a great measure, to the works on more ne occasion being stopped, owing to a breakdown of the ery. An account explaining the deficiency of £15,548. has been ed.

RE HEYWOOD CHEMICAL COMPANY (LIMITED).—In the ry Court on Monday, 9th inst., the creditor's petition for a -up order was heard. Since its presentation the company ssed a resolution for a voluntary winding up, and an order was ade that the voluntary winding up should be continued under ervision of the Court.

Macnaghten appeared for the petitioner; and Mr. Whinney for npany.

Trade Notes.

AN ALLEGED NUISANCE AT NEWTON HEATH.—At the City Police Court, on Tuesday, Mr. Miller, from the Town Clerk's office, applied to the magistrates for permission to withdraw a summons against Mr. Hamor Lockwood for an alleged nuisance arising from his chemical works at Newton Heath. At the original hearing of the case Mr. Lockwood gave an undertaking that the nuisance complained of should be abated, and having fulfilled his promise the bench now allowed the summons to be withdrawn.

THE ASKANIA CHEMICAL WORKS.—According to the report of these works, situated at Leopoldshall, for the past year, the surplus has fallen from 56,388 mks. in the year 1890 to 26,818 mks. in the year 1891. The most extraordinary circumstances, which could not possibly have been foreseen, have influenced the results of the year 1891. Not only were the prices of coal and wages much higher than in the preceding year, but also the preparation of the salts at disposal was accompanied with difficulties, which caused the out-put to remain very much in arrear of that of the preceding year. Of the year's profits 16,560 mks. were devoted to the shareholders, who thus received a dividend of exactly 6 per cent. On the balance sheet stands the amount of the manufactured articles in stock, which is valued at exactly 23,042 mks., on the debit side 29,970 mks., and on the credit side 19,276 mks.

THE PRODUCTION OF STASSFURT SALTS.—The productions of these well known mines, which are controlled by German syndicate, are extensively used for manufacturing and agricultural purposes. The following table gives total annual production for the last three years:—

	Tons. 1889.	Tons. 1890.	Tons. 1891.
Potassium chloride	60,667	62,009	65,739
Potassium sulphate	3,047	6,343	8,810
Double sulphate of potassium and magnesium calcined	4,514	5,306	5,585
Double sulphate of potassium and magnesium crystallized	328	444	515
Manure salts—calcined	1,390	897	1,507
Kieserite	14,592	15,682	13,993
Kainit and sylvinite	129,090	149,456	202,619
Carnalite	18,682	17,093	19,347

THE LATEST USE FOR ELECTRICITY.—The latest suggestion from the fertile brain of Mr. Edison is to use electrified water in warfare; the idea savours rather strongly of Jules Verne and his wonderful "Nautilus," but there is no telling what electricity can't do, from refining sugar upwards. Edison states his intentions as follows:—"In each fort I would put an alternating machine of 20,000 volts capacity. One wire would be grounded. A man would govern a stream of water at about 400lbs. pressure to the square inch, with which the 20,000 volts alternating current could be connected. The man would simply move this stream of water back and forth with his hand, playing on the enemy as they advanced and mowing them down with absolute precision. Every man touched by the water would complete the circuit, get the force of the alternating current, and never know what had happened to him." It is certainly a "shocking" notion, but not more so than the recent proposal to shoot vitriol through specially constructed guns in order to discomfort one's adversaries.

THE QUARTERLY COPPER RETURNS.—Subjoined are the Customs imports and exports of copper for the past three months, reduced to a common denominator, and compared with the same figures in 1891:—

	1892.	1891.
	Tons.	Tons.
Copper in Pyrites	1,176	1,295
" Ore	1,026	1,016
" Regulus	2,831	2,658
" Precipitate	3,505	1,194
	8,538	6,163
Foreign Raw Copper	2,378	3,160
Imports, March	10,916	9,323
Exports, March	7,692	7,846
Imports, January 1 to March 31 ..	31,939	32,143
Exports, January 1 to March 31 ..	21,252	20,223

THE ALKALI ACT.—Sir Henry Roscoe has given notice of an amendment on the second reading of the Alkali Works Bill to the effect that no legislation will be satisfactory which does not bring processes evolving certain specified noxious gases under inspection and regulation.

The Brine Pumping Compensation Area.—Much excitement was occasioned on Thursday, last week, at Northwich and Winsford, when it become known that the Local Government Board had decided the keenly fought question as to whether the Cheshire compensation for subsidence area should include the two towns in one area or separate them. From the communication now received from the Local Government Board, it appears they have drawn up a draft provisional order which is practically a compromise. They have formed only one district, but that includes only the Local Board areas of Northwich and Winsford, and part of the Northwich Rural Sanitary Authority's district, and entirely omits the Middlewich and Sandbach districts. The order will come before Parliament for confirmation in June, and may then be the subject of appeal by the Salt Union, which would no doubt prevent the Compensation Act coming into active operation during this session of Parliament. Compensation under the Act, however, in any case dates from the passing of the Act.

Obituary.—The death of Professor August Wilhelm von Hofmann, the distinguished chemist at Berlin, was announced on Thursday, 5th inst. He was a native of Giessen, where he was born 8th April, 1818, and was already an active student of modern philology when he made the acquaintance of Liebig. His occupancy later of the chair of chemistry in the Royal College of Chemistry, which has since become part of the Royal School of Mines, made him well known in London. For twelve years Hofmann laboured with success in England, and then undertook, at the request of the Prussian Government, to organise the Bonn chemical laboratory, and in 1863 succeeded Mitscherlich, and two years later was called to Berlin. He was the first president of the German Chemical Society, founded in 1868. His multifarious researches in organic chemistry and his relation to the discovery of the aniline dyes—many of which are due to him—are matters of scientific history. His "Introduction to Modern Chemistry," based on the lectures to his English students, has been translated into many languages. The Royal Society awarded him a Royal medal in 1854, and in 1888 he was ennobled, on his 70th birthday. In addition to several important independent works, he was the author of many memoirs in scientific periodicals, and on the death of Liebig became the editor of the "Annalen der Chemie."

Market Reports.

TAR AND AMMONIA PRODUCTS.

The tar products market appears to be in a very deplorable condition. Benzol is flat, 90% being only value for 1s. 6d., and 50 90's 1s. 3d. Anthracene remains much the same as quoted in our last report, as there has been no business of note in the interim. 30% A is fetching 11d., and 30% B 8d. Various reports are made concerning pitch; whilst some makers are willing to sell at 24s. to 25s., others are quoting 32s. 6d. Probably the accurate value would be somewhere about the mean of these figures.

The sulphate of ammonia market is very dull indeed, the agent of the Gas Light and Coke Co. being evidently willing to accept £10., but even at this price buyers are very scarce. There are sellers of London outside makes at £10. 3s 9d. for early delivery, but purchasers will not give more than £10. 1s. 3d. The Hull market is quiet, but consumers are not disposed to purchase any quantity at more than £10., and there are rumours that less than £10. will be the possible figure in the near future.

THE METAL MARKETS.

LONDON, Wednesday.—Pig iron firm; Scotch warrants closed at 40s. 6d. cash. Middlesbrough 37s. 8½d. cash, and Hematite 47s. 9d. cash. Copper, steady. Chili bars, G.O B.'s and G.M B.'s closed at £46. 3s 9d. cash, and £46. 11s. 3d. to £46. 18s. 9d. three months. Tin firm: Straits closed at £94. 10s. to £94. 12s. 6d. cash, and £94. to £94. 2s. 6d. three months. Australian, £94. 10s. cash; English ingots, £97. 10s. Lead firm: Spanish, £10. 10s to £10. 11s. 3d. English, £10. 15s. to £10. 17s. 6d. Silesian spelter, ordinary, £22. 12s. 6d. to £22. 15s. Quicksilver, £6. 15s. first hands, and £6. 14s. second hands. Copper shares steady: Cape, 1 1/16 to 1 1/8; Copiapo, 2¼ to 2⅜; Libiola, 2⅞ to 3; Mason and Barry, 4⅜ to 4½; Rio Tinto, 16½ to 16⅝; Tharsis, 4⅜ to 4¾; Namaqua, 1⅛ to 1¼; Panulcillo 7/16 to 9/16.

WOLVERHAMPTON, Wednesday.—Ironmasters to-day welcomed the prospect of an early termination of the Durham strike as indicating probable lower prices for coal in all ironmaking districts. Colliery owners still assert that no reduction will be possible. Demand for iron unimproved, and works only partly employed. Prices weak. Common bars, £5. 12s. 6d. to £6; good merchant bars, £6. 10s.; marked bars, £8.; hoops, £6. 12s. 6d.; gas strip, £6.; sheets doubles, £7. 5s. Pigs somewhat improved; Lincolns, 47s. stations; Derbyshires, 44s. delivered; superior brands 1s. more

GLASGOW, Wednesday.—Market firm, with fair busines Scotch done; closing buyers at 40s. 4d. cash and 40s. 6 month, sellers ask 1½d. more. Middlesbrough done at 37s. 9 37s. 7½d. cash; closing with buyers at 37s. 8½d. cash, ask 37s. 9½d. Hematite done at 47s. 10½d. cash; closing at 47s. 9d. cash, sellers ask 47s. 10d.

LIVERPOOL OIL AND COLOUR MARKET

LIVERPOOL, Wednes

OILS.—Palm oil has further improved and remains steady Lagos at £21. transit, and Bonny £20. 5s. per ton at quay. continues unaltered at last week's prices. There is a somewhat demand to-day, sales of Candia having been made at £34. Lin pretty steady with a fairly good demand, there being a slight im ment in sellers' favour, prices now being 19s. 6d. to 20s. per t export casks. Rape: refined Stettin, 31s. Cottonseed: both pool refined and American have advanced to 20s. during the to-day, however, Liverpool refined is quoted 19s. 6d., while Am remains at 20s., at which prices they are both steady. Castor quiet, good seconds Calcutta quoted 2 13/32 to 2 5/8, first pressuse is nominally 2 11/16d. Tallow: North American continues at 24s. t according to quality. South American is on the advance. common, has returned to 4s. 3d., but there is not much doing, medium is quoted 4s. 9d. to 6s. 6d.; fine, 7s. to 10s. per cwt. of Turpentine have varied considerably, as low as 25s. 3d. having touched during the week. It is firm to-day, however, at 25s. 6 cwt. Petroleum continues without change; American 5¼d. to t according to quality. Russian refined, 4½d. per gallon.

COLOURS without change. Ochres: Oxfordshire, common, medium, £12., best, £15.; Derbyshire, common, 40s., me 50s., best, 60s. Welsh, best, 70s., seconds, 50s., and com 18s.; Irish, Devonshire, 40s. to 45s.; French, J.C., 55s. to M.C., 65s. to 67s. 6d. Umber: Turkish quiet. Devonshire, 5 55s. White lead, red lead, and oxide of zinc unchanged. Ver red, £6. 10s. to £10. Cobalt: Prepared oxide, 10s. 6d.; b 9s. 9d.; blue, 6s. 6d. Zaffres: No. 1, 3s. 6d.; No. 2, 2s Oxide of iron: common, £6.; medium, £10.; finest, £20.

REPORT ON MANURE MATERIAL.

During the past week there has been less doing for promp early delivery, though a good business continues to be done in n of soda. Buying of mineral phosphates for shipment continu slightly hardening prices, but buyers are shy about contractin other material in the meantime.

An advance upon 8½d. is generally being quoted for 75 Florida phosphate rock, but we have not heard that over 8½d been paid. Nearest value of Peace River rock is 7¼d, and of S Carolina River rock 7d. per unit, in cargoes c.i f. to good U.K. p Buyers do not follow the advance demanded for cargoes of River bones and £4. 2s. 6d. must be quoted as nearest selling value for sun shipment. £4. ex quay Liverpool would probably now be accepte crushed Kurrachee bones for shipment, though £4. 3s. 9d. is asked. No business reported on spot, £3. 18s. 9d. asked, ex On spot sales of Bombay bone meal have been made at £ £4. 7s. 6d., according to quality, ex store. Nothing reported a or for shipment. Good charring bones have been sold at £4 2s up to £4. 6s. 3d., ex quay Liverpool.

There has been some falling off in deliveries of nitrate soda, th for the time of year the business is still large on spot. Spot pri 8s. 6d. to 8s 9d. per cwt. for ordinary quality and refined respecti There is very little disposition to touch cargoes afloat, 8s. 3d i value of anything due, and for later cargoes 8s. is about the value.

Nothing fresh to report in dried blood, kainit, or superphosph prices remain unchanged.

MISCELLANEOUS CHEMICAL MARKET.

The demand for alkalies generally is fairly good. Soda ash is sold for early delivery and prices are firm. Leblanc soda ash 48/5 1 3/8d. per degree f.o.b. Ammonia soda ash, 58%, 1 1/16d. per deg The same prices are quoted for forward contracts. Bleaching pow £7. 10s. nett., f.o.r. for spot; and £7. 5s. for contract. Caustic is without any change, and prices remain as for some time past, F.o.b. Tyne, 77%, £11. 10s.; and f.o.b. Liverpool, 74%, £11. 1 70%, £10. 10s. 60%, £9. 7s. 6d.; cream, 60%, £9. 2s. 6d. for 10 lots. Soda crystals steady. Bicarbonate of soda, £6. 10s. to £6. f.o.b., according to package. Chlorate of potash, 6¾d. to 7d. per and chlorate of soda, 8d. Recovered sulphur quiet, and price £5

o.r. Sicilian sulphur lower at £4. 10s. for best thirds, c.i.f. In excess of requirements and price nominal. For sulphate of e demand is still inadequate, and price £15. 5s. to £15. 10s. Acetate of lime, brown, is steady at £5. 17s. 6d. to £6.; at £10. 5s. Acetate of soda at £16. 5s. c.i.f. Acetates are weak. Acetic acid is moving off freely at current rates. arsenic there is good business being done at £10. 15s. to £11. In Bichromates of soda and potash an advance of price has e to 3¾d. and 4½d. nett. per lb. respectively. This result brought about by a combination of the makers. Prussiate of rather easier for forward delivery at 9¾d. to 10d. per lb. id still quiet at 3d. per lb. Tartaric acid 11¾d. per lb. s to the state of trade in chemicals from various disiricts are isfactory.

THE LIVERPOOL MINERAL MARKET.

arket this week has ruled firm, and prices have been well d. Manganese: Arrivals continue small, and prices remain rate at 6¼d. per lb.; sulphate, £21. 10s.; oxalate, 1s. 6d. chloride, £15.; carbonate, £12. 10s., steady. Magnesite: ip quiet. Raw ground £6. 10s., and calcined £12. 10s. (Irish Hill brand) firm; lump 20s. seconds 16s., and thirds 12s. alk: Arrivals this week are larger: prices, however, continue a good business doing. "Angel White" brand, silvery, 2s. 6d.; prime quality, 90s. to 95s.; and superfine, 105s. Carbonate still scarce, especially best lump, at 90s. to 95s.; to 80s.; whilst finest white sulphate is steady. "Angel No. 1, 70s.; No. 2, 60s. to 65s.; No. 3, 45s. Pumice stone Iron ore steady; Bilbao shipments unaltered; Irish and nd easy. Santander and manganiferous, there is more doing. ne continue steady, especially for best qualities. No. 1 lump, o £6.; smalls, £5. to £5. 10s. Fullers' earth quiet; best .; fine impalpable ground, £7.; "Emerald" ground, 80s. wolfram, tungstate of soda, and tungsten metal firm and Chrome ore firmer, especially for higher grades. Antimony metal rather flat. Asbestos very firm. Potters' lead ore, 10. 10s. to £11. 10s. Calamine easy. Strontia sulphate quiet. Limespar steady, especially for English manu- old G.G.B. brand in demand at 50s. (ground). Felspar Fluorspar: Best quality scarce. Ferro-manganese steady, .; 85%, £13. 15s. Plumbago brisk. Spanish, £5.; best mp at last quotations; Italian and Bohemian, £4. to £12. "Founders," £5. to £6.; Blackwell's "Mineraline," £10. nd, 20s. to 22s. 6d. Ground mica, £45. to £50. China clay ommon, 18s. 6d.; good medium, 22s. 6d. to 25s.; best, 30s. Runcorn). Bog ore (oxide of iron) steady; finest quality s.

TYNE CHEMICAL REPORT.

TUESDAY.

mical trade is steady; prices remain unaltered. Bleaching ntinues in strong demand, there is also more business doing soda. Bleaching powder, softs, £7. 11s. 3d. and £7. 12s. 6d. carce, hards, £7. 17s. 6d. per ton; caustic soda, 76/77%, per ton, 70%, £10. 10s. per ton; recovered sulphur, 2 cwt. 5s. per ton; soda ash, 48%, £5. 8s. 9d. per ton, 52%, 9d. per ton, 56%, £6. 6s. 9d. per ton; alkali, 36%, 6d. per ton; white alkali, 48%, £6. 10s. per ton, 50%, d. per ton, 52%, £7. per ton; hyposulphite of soda, £7. 5-7cwt. casks, £7. 15s. per ton in 1 cwt. kegs, both in 10 silicate of soda, 75° Tw. £3. per ton, 100° Tw. £4. per Tw. £4. 7s. 6d. per ton; soda crystals, in casks, £3. per weight, in 2 cwt. bags, £3. per ton nett weight; chlorate 7d. per lb. less 6%; pearl hardening, £3. 10s. per ton; pure hate of alumina, £4. 10s. per ton; blanc fixe, £7. 10s. per ride of barium, £7. 10s. per ton; nitrate of baryta 19. per ton; nitrate of baryta, ground, £19. 10s. per ton; f barium, £7. per ton; carbonate of alumina, £28. 10s. luminate of soda, £33. 10s. per ton; hydrate of barium, on.

urham salt steady at 10s. per ton nett f.o.b. Tees.

miners strike: At a meeting held on Saturday, the Durham sociation decided to give the Federation Board power to see wners and make the best terms possible for a settlement of which has proved terribly disastrous to the trade of the l inflicted untold sufferings upon large numbers of innocent

An early resumption of work will be welcomed by all classes of the community.

There is more movement in the coal trade in anticipation of the termination of the strike.

Northumbrian steam coal is quoted at 13s. per ton f.o.b.; manufacturing coal rather easier. Coke still very scarce.

WEST OF SCOTLAND CHEMICALS.

GLASGOW, TUESDAY.

There is still no change of price in the paraffin section, but the utmost stagnation prevails, and something must give way. Masters have reduced the wages of their miners and workmen by 10 per cent., taking effect from the beginning of this week. To this there will at least be a partial resistance. It is said that the balancing of one of the mineral oil companies, hitherto paying a dividend steadily, has come out this year with a loss, but public announcement is awaited. The mines and plant of the West Lothian Oil Company are still without a buyer. The unfortunate shareholders now talk of an attempt at re-suscitation.

The sulphate of ammonia market here is perceptibly flatter, and the utmost procurable value at the moment is £10. 2s. 6d. Leith prompt. Operators appear to have given up the practice of looking out for recovery, or signs of it.

In the general chemicals market the only change worthy of being noted is a slight concession in caustic soda. Business is extremely dull here, the dullness affecting all branches of industry, including ship-building. Idleness in the dyeworks is spreading and some works, hitherto on three-quarter time, have had to go on half time.

Chief prices current are:—Soda crystals, £3., nett Tyne; alum in lump, £5. 10s., nett Glasgow; soda ash, 1⅜d., less 2½%, Tyne; caustic soda, white, 74°, £11. 10s., 70/72°, £10. 10s., 60/62°, £9. 7s. 6d., and cream, 60/62°, £9. 2s. 6d., all nett Liverpool; bicarbonate of soda, 5 cwt. casks, £6. 15s., and 1 cwt. casks, £7. nett Liverpool; refined alkali, 1⅜d., less 2½% Tyne; bleaching powder, £7. 10s. to £7. 12s. 6d. nett Tyne; saltcake, 37s. 6d.; borax, English refined, £29., and boracic acid, £37. 10s., nett Glasgow; bichromate of potash, 3¾d., less 12½% for Scotch and English deliveries (for export 3½d., less 10% f.o.b. Glasgow); bichromate of soda, 2¾d., less 10% for Scotch and English deliveries (for export 2½d., less 10% f.o.b. Glasgow); chlorate of potash, 6¾d., less 5% any port; nitrate of soda, 8s. 6d.; sulphate of ammonia, £10. 2s. 6d. f.o.b. Leith; salammoniac, first and second white, £35. and £33., less 2½% any port; sulphate of copper, £15., less 5% Liverpool; paraffin scale (hard), 2$\frac{15}{16}$d., and soft 2$\frac{5}{8}$d. to 3d. per lb.; paraffin wax, 120°, semi-refined, 3$\frac{5}{8}$d. to 4d.; paraffin spirit (naphtha), 6d. a gallon; paraffin oil (burning) 5d., 5¼d. and 5½d. according to kind, at works, for Scotch buyers (English sales about 1d. lower); ditto (lubricating), 865°, £3. 10s. to £4., 885°, £5. 5s. to £7., and 890/895°, £6. to £8. Week's imports of raw sugar at Greenock, 18,478 bags.

New Companies.

CYANIDE GOLD RECOVERY SYNDICATE, LIMITED.—This company was registered on the 2nd inst., with a capital of £5,000. in £1. shares, to negotiate loans, to lend money, to draw, accept, endorse, buy, sell, and deal in bills of exchange, promissory notes, bonds, debentures, coupons, etc., and for other purposes.

JOHN HUMPHREYS, LIMITED.—Capital £2,000, in £1. shares. Objects: To acquire and extend the business of a soap manufacturer, now carried on by John Humphreys, at Ashforth-street, Nottingham, and to carry on the same. The first subscribers are:—

	Shares.
J. Humphreys, Ashforth-street, Nottingham, soap manufacturer	1
Mary Humphreys, wife of above	1
R. Sands, 5, Baker-street, Nottingham, accountant	1
M. Stephens, 19, Palmerston-street, Nottingham, soap maker	1
F. Leman, 15, Lenton-avenue, Nottingham, clerk	1
H. Gascoigne, 37, Sherbrooke-road, Nottingham, clerk	1
C. M. Leman, 15, Lenton-avenue, Nottingham, clerk	1

SODIUM PATENTS SYNDICATE, LIMITED.—This company was registered on the 3rd inst., with a capital of £4,000., in £1. shares, to carry on business as chemical manufacturers, colliery owners, salt, alkali, and soda manufacturers, dyers, drysalters, etc.

STAFFORD SALT AND ALKALI CO., LIMITED.—This company was registered on the 2nd inst., with a capital of £20,000., divided into 3,980 ordinary shares of £5. each, and 100 founder's shares of £1. each; to carry into effect an agreement dated April 29th, 1892, between Mr. W. Cooper of the one part, and Mr. T. Westhead (for the

company), of the other part; for the purchase of certain freehold land at Stafford with the brine shaft, salt deposits, etc., and to carry on the business of salt proprietors, salt, alkali, and general chemical manufacturers, miners, etc. The subscribers are:—

	Shares. Ord.	Fndr's.
C. H. Wright, F.C.A., Tillington Hall, Stafford	100	10
W. H. Peach, Friar's Cottage, Stafford, shoe manufacturer	100	10
J. P. Underhill, Newport, Salop, solicitor	100	10
G. B. Haddock, The Exchange, Liverpool, shipbroker	100	10
F. Byrne, 48, Brewer-street, Golden-square, E.C., agent	1	—
W. H. Eyre, 16, Golden-square, W., solicitor	100	10
W. Matthews, 2, Chapel-terrace, Stafford, leather merchant	30	—

Thomas A. Barber and Co., Limited.—This company was registered on the 29th ult., with a capital of £50,000., in £1. shares (39,500 preference, 10,000 ordinary, and 500 founder's), to acquire and carry on the business of a dealer in esparto grass, grain, iron ore, gypsum, bark, and other produce of Algeria, now carried on by Mr. T. A. Barber, at Oran, Algeria. The subscribers are:—

	Shares.
W. Parkins, 46, Hemstall-road, West Hampstead, N.W.	1
H. Fox, 11, Abchurch-lane, E.C., solicitor	1
T. H. Robinson, 16, Ockendon-road, N., clerk	1
R. Thicknesse, 11, Abchurch-lane, E.C., solicitor	1
W. F. Robinson, 33, Baxter-road, Islington, clerk	1
A. E. Hill, 41, Baxter-road, Islington, clerk	1
A. E Way, 3, Crosby-square, E.C., accountant	1

Webb's Oxygen Syndicate, Limited.—This company was registered on the 29th ult., with a capital of £2,000., in £1. shares, to acquire certain patents and other rights, to enter into the agreement referred to in clause 2 of the articles, and to carry on the business of the manufacture and compression of oxygen and other gases. The subscribers are:—

	Shares.
G. Webb, 13, Mill-street, Lambeth, limelight engineer	1
G. Webb, junr., same address, limelight engineer	1
G. H. Rayner, 37, Chancery-lane, London, patent agent	1
L. Terrey, 54, Chester-street, Kennington, merchant	1
T. Terrey, 56, Chester-street, Kennington, merchant	1
J. B. Faithfull, 111, Comeragh-road, Kensington, merchant	1
J. D. Michell, 8, Shaftesbury-road, London, architect	1

The Patent List.

This list is compiled from Official sources in the Manchester Technical Laboratory, under the immediate supervision of George E. Davis and Alfred R. Davis, who report professionally upon the value of Chemical Patents.

APPLICATIONS FOR LETTERS PATENT.

Smoke Consuming Apparatus. W. H. Shields. 7,736. April 25.
Ejectors for Tar and Ammonia Water. J. Morrison. 7,753. April 25.
Refining Iron. H. Hofer. 7,758. April 25.
Manufacture of Phenols and Phenolcarboxylic Acids. B. Willcox. April 25.
Centrifugal Separators. C. A. Hult. 7,788. April 25.
Manufacture of Steel and Iron. J. Colley and A. Colley. 7,795. April
Joint Sockets for Tubes. L. Morris. 7,811. April 26.
Preventing Smoke in Steam Boilers and Furnaces. J. Simpson. April 26.
Regulating the Supply of Air to Puddling and other Furnaces. S. 7,853. April 26.
Controlling the Supply of Air to Steam Boilers and other Furnace Oates. 7,853. April 26.
Manufacture of Hydraulic Cement from Sewage Sludge. A. Angell Candy. 7,857. April 26.
Improved Ventilating Cowl. M. Goodwin. 7,882. April 26.
Centrifugal Pumps. J. E. Lawrence. 7,885. April 26.
Improvements in the Distillation of Coal for Gas Making, etc. Williams. 7,888. April 26.
Galvanizing Aluminium. G. Wegner. 7,909. April 27.
Aluminium and Potassium Phosphates Soluble in Water. H. 7,957. April 27.
Extracting Nitro-Glycerine from Waste Acid in the Manufact Nitro-Glycerine. J. Lawrence. 7,981. April 27.
Improvements in the Manufacture of Illuminating Gas. P. Dyer 7,983. April 27.
Manufacture of Ferric Chloride. H. C. Bull. 7,997. April 28.
Smoke Consuming Apparatus. W. Lees 8,015. April 28.
Destroying Noxious Gases and Fumes. E. Marsh. 8,034. April 28.
Artificial Fuel. D. Westlake. 8,080. April 29.
Improvements in Electro Deposition. J. W. Davis and J. O. Evans. April 29.
Gas Generators. T. D. Rock. 8,112. April 29.
Distilling Apparatus J. Bonnoure. 8,155. April 29.
Improvements in the Combustion of Fuel. R. Marshall. 8,159. Apr
Improved Dryer for Paints and the Like. B. Goldmann. 8,169. Apr
Improved Soap Tablet. C. Kloeble. 8,217. April 30.

Gazette Notices.

PARTNERSHIPS DISSOLVED.

F. Hankin and F. E. Applevard under the style of Rayner and Co., Bisho street Within, E.C., oil brokers and merchants, as far as regards F. E. yard.

T. Pickles, S. Turner, and J. Standring under the style of Pickles, Tur Co., Manchester, drysalters.

R. S. Howarth and E. B. Harlock under the style of Howarth and Co. Platting, Manchester, sulphuric acid and chemical manufacturers, as regards R. S. Howarth.

B. B. Haresceugh and E. J. Burrows under the style of B. B. Haresceu Co., Leeds, chemical manufacturers and sanitary engineers.

Phillip and Barker, Sheffield, analytical and metallurgical chemists.

BANKRUPTCY ACTS, 1883 and 1890.

Receiving Orders.

Richard Verity, Seymour-street, Portman-square, W., late King's-road, C chemist and druggist.

Albert Ernest Huggins, Bristol, oil and colour dealer.

IMPORTS OF CHEMICAL PRODUCTS

AT

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending April 30th.

Acetate of Lime—

U. States,	726 pkgs.	Lister & Biggs
,,	555	H. Wallace & Co.

Acetate of Manganese—

Germany,	1 pkg.	Blumann & Stern

Acetic Acid—

Holland,	200 pkgs.	Beresford & Co.

Acetone—

Holland,	8 pkgs.	A. & M. Zimmermann
U. States,	2	W. Bayer & Co

Alum—

Holland,	105 pkgs.	Ohlenschlager Brs.
,,	2	R. Morrison & Co

Arsenic—

Germany,	65 pkgs.	Burgoyne & Co.

Barium Chloride—

Germany,	23 pkgs.	Petri Bros.

Barytes—

Germany,	24 cks.	O'Hara & Hoar
,,	23	W. Harrison & Co.
Belgium,	25	J. L. Lyon & Co.
,,	75	W. Harrison & Co.
France,	42	J. B. Orr & Co.
Belgium,	62	J. L. Lyon & Co.
Holland,	23	Magee, Taylor, & Co.
,,	24	A. Zumbeck & Co.
,,	23	W. Harrison & Co.

Borax—

Germany,	20 pkgs.	F. Stahlschmidt & Co.

Caoutchouc—

Holland,	137 c.	Phillipps & Graves
Portugal,	20	,,
E. Indies,	20	W. Pope & Co.
,,	103	Ralli Bros.
,,	71	E. Barber & Co.
Rangoon,	83	J. H. & G. Scovell
U. States,	55	
Madagascar,	66	Procter Bros.
Penang,	40	Prop. Bull Wf.
Mozambique,	17	,,
Germany,	14	Anderson, Weber, & Smith
Mozambique,	18	Lewis & Peat
Rangoon,	798	L. & I. D. Jt. Co.
Mozambique,	17	Forbes, Forbes, & Co.
Inhambane,	14	L. & I. D. Jt. Co.
Zanzibar,	17	Lewis & Peat
,,	11	Anderson, Weber, & Smith
U. States,	1	Lewis & Peat
,,	15	Prop. Bull Wf.
Savanilla,	105	Stiebel Bros.
Germany,	5	Lewis & Peat
,,	15	L. & I. D. Jt. Co.
Zanzibar,	58	,,

Carbonic Acid—

Holland,	2 dns.	J. Barber & Co.

Caustic Soda—

Holland,	100 pkgs.	Beresford & Co.

Caustic Potash—

France,	10 drs.	Spies Bros. & Co.

Chemicals *(otherwise undescribed)*

Germany,	10 pkgs.	W. Burton & Sons
Holland,	2	Phillipps & Graves
Germany,	32	,,
,,	65	T. H. Lee
,,	36	A. & M. Zimmermann
France,	4	C. Webster

Citrate of Lime—

Italy,	10 pkgs.	Fellows, Morton, & Co.

Cream of Tartar—

Italy,	44 pkgs.	Howards & Son
France,	7	Smith, Abbott, & Co.
,,	1	B. & F. Wf. Co., Ltd.
,,	14	W. C. Bacon & Co.
,,	3	Ross & Deering
Holland,	46	Middleton & Co.

Dyestuffs *(otherwise undescribed)*

S. Russia,	50 pkgs.	Thomas & Cook

Dyestuffs—

Annatto

Ceylon,	25 pkgs.	Hoare, W

Anthracene

Spain,	130 pkgs.	Burt, Bo

Argols

Italy,	14 pkgs.	Thames S. L. Co.
Greece,	11	G. N. Sourahy
France,	58	Ross & De
Italy,	2,248	B. Jacob &
,,	92	Thames S. T. & L.

Cutch

E. Indies,	500 pkgs.	Ross & De
Rangoon,	4,100	Wallace
,,	786	H. A. Lichfield
,,	867	Morison &
,,	755	A. Howden
,,	1,816	Phillipps & C
,,	450	Elkan

Divi divi

E. Indies,	61 pkgs.	Walker, M
Savanilla,	42	Major &

Extracts

France,	50 pkgs.	Prop. Chmlds
,,	1	Mory
,,	70	Carey &

Denmark, 65 Bailey & Leetham
France, 100 L. J. Levinstein & Sons
Belgium, 85 J. L. Lyon & Co.
Austria, 734 A. J. Humphrey
France, 46 T. H. Lee

Gambier
Singapore, 168 pkgs. Evans & Co.
,, 104 Brinkmann & Co.
, 444 Prop. Butler's Whf.
,, 891 Hoare, Wilson, & Co.
,, 432 L. & I. D. Jt. Co.
,, 438 J. H. & G. Scovell
,, 832 R. & J. Henderson
,, 1,282 E. Boustead & Co.
China, 431 Adamson, Gilfillan, & Co.
Singapore, 888 Cox, Patterson, & Co.

Indigo
E. Indies, 82 chts. L. & I. D. Jt. Co.
,, 30 Vokins & Co., Ltd.
,, 17 W. Brandts, Sons, & Co.
,, 9 Beneche, Souchay, & Co.
,, 17 Arbuthnot, Latham, & Co.
,, 7 J. Forsey
,, 4 Elkan & Co.
,, 30 L. & I. D. Jt. Co.
,, 2 cs. Vogt. Herbst, & Co.
Manilla, 58 1 bx. G. Ward & Sons

Myrabolams
E. Indies, 3,359 pkgs. J. P. Alpe & Co.
,, 2,729 L. & I. D. Jt. Co.
,, 682 Union L. Co., Ltd.
,, 683 Cayzer, Irvine, & Co.

Saffron
Gandia, 1 pkgs. B. & N. Wf. Co., Ltd.
Italy, 1 Pickford & Co.

Sumac
Italy, 200 pkgs. W. France & Co., Ltd.
,, 150 W. Barber & Co.
,, 50 Hicks, Nash & Co.

Tanners' Bark
Melbourne, 54 t. Dalgety & Co.
U. States, 10 W A. Bowditch
Adelaide, 36 Beresford & Co.
Germany, 10 ,,
Adelaide, 75 Devitt & Hett
,, 41 Baxter & Hoare
Auckland, 7 Beresford & Co.

Valonia
A. Turkey, 10 t. Hicks, Nash, & Co.

Farina—
Holland, 50 pkgs. R. G. Hall & Co.
Italy, 69 Baxter & Hoare

Glucose—
Sydney, 130 pkgs. 130 c. Trier, Meyer, & Co.
U. States, 1,200 2,203 R. G. Hall & Co.
,, 1,000 1,000 Union L. Co., Ltd.
,, 550 550 Devitt & Hett
,, 250 250
,, 2,000 2,000 Beresford & Co.
,, 100 100 Barrett, Tagant, & Co.
Germany, 6 36 J. Barber & Co.
Holland, 50 50 A. Farmer
U. States, 50 297 Fuerst Bros.
,, 500 500 J. Forsey
France, 200 200 L. Norman & Co.
,, 150 150 J. Barber & Co.
U. States, 500 500 L. & I. D. Jt. Co.
,, 500 2,826 R. G. Hall Co.
,, 120 660 T. M. Dache & Sons
Germany, 25 239 Prop. Chmbln's Wf.
France, 200 200 L. Norman & Co.

Glycerine—
Germany, £50 Beresford & Co.

Guano—
Belgium, 545 t. Anglo Contl. G. Wks.

Lithia—
Germany, 1 pkg. Spies Bros. & Co.

Manganese—
Holland, 5 c. R. Morrison & Co.

Manure—
Germany, 5 t. Beresford & Co.
France, 100 J. Burnett & Sons
Spain, 30 B. Jacob & Sons
Germany, 90 F. W. Berk & Co., Ltd.

Methyl Alcohol—
Germany, 12 drs. Stein Bros.

Nitre—
Chili, 11,331 bgs. W. Montgomery & Co.
,, 19,288 ,,

Ochre—
France, 30 cks. Arnati & Harrison
Holland, 2 Pickford & Co.
,, 32 pkgs. Phillipps & Graves
Spain, 250 T. H. Lee
France, 71 B. Young
France, 2 J. L. Lyon & Co.
Belgium, 16 H. J. Lenne & Co.

Painters' Colours—
Germany, 25 cs. Phillipps & Graves
Holland, 7 pkgs. J. Owen
U. States, 10 Davies, Turner, & Co.
Germany, 5 L. & I. D. Jt. Co.
,, 65 cks. Magee, Taylor, & Co.
Belgium, 1 Leach & Co.
Holland, 2 R. Baelz & Co.
,, 1 Haeffner, Hilpert, & Co.
France, 6 Messageries, Parisiennes
Germany, 5 H. Lambert
,, 12 C. S. Lovell
Italy, 66 cks. 61 brls. Magee, Taylor, & Co.
Holland, 5 Phillipps & Graves
France, 12 Flageollet & Co.
Austria, 15 Soundy & Sons
U. States, 15 L. & I. D. Jt. Co.
Singapore, 25 ,,
Belgium, 2 T. Palmer
Germany, 14 T. H. Lee

Paraffin Wax—
Rangoon, 700 cs. H. Hill & Sons
U. States, 339 brls. J. H. Usmar & Co.

Phosphate Rock—
Holland, 210 t. Anglo Contl. G. Wks.
,, 10 B. Jacob & Sons
Belgium, 265 Anglo Contl. G. Wks.
,, 140 Miller & Johnson

Plumbago—
Germany, 21 cks. R. Warner & Co.
Ceylon, 354 brls W. H. Cole & Co.
,, 124 Doulton & Co.
,, 124 L & I. D. Jt. Co.
Germany, 10 B. Gallaway

Potash—
France, 6 pkgs. Weatherley, Mead, & Co.
,, 60 c. F. W. Berk & Co., Ltd.
,, 57 Petri Bros.

Potassium Carbonate—
Germany, 3 cs. J. Barber & Co.
France, 20 J. A. Reid
Germany, 9 cks. Beresford & Co.

Potassium Cyanide—
Germany, 4 pkgs. H. Lorenz

Potassium Hydrate—
France, 10 Spies Bros. & Co.

Potassium Iodide—
Germany, 2 pkgs. H. Lorenz

Potassium Muriate—
Germany, 150 pkgs. F. W. Berk & Co., Ltd.

Potassium Permanganate—
Germany, 16 pkgs. Spies Bros. & Co.

Potassium Sulphate—
Germany, 500 pkgs. F. W. Berk & Co., Ltd.

Pyrites—
Spain, 1,936 t. C. Tennant, Sons, & Co.

Rosin—
U. States, 500 brls. Prod. Brokers Co.
,, 1,000 F. & S. Chiesman & Co.
,, 114 Moore & Hole

Salt—
Germany, 442 pkgs. B. A. Smith

Saltpetre—
E. Indies, 2,456 bgs. Ralli Bros.
,, 925 Perkins & Homer
,, 481 C. Wimble & Co.
,, 613 L. & I. D. Jt. Co.
Germany, 80 cks. P. Hecker & Co.
,, 2 Craven & Co.
,, 100 T. Merry & Son
E. Indies, 2 Nicks, Waterhouse, & Co.
Belgium, 102 bgs. P. Hecker & Co.

Soda—
Belgium 510 c. Leach & Co.

Soda Crystals—
Belgium, 500 c. Knight, Hill, & Co.

Sodium Acetate—
France, 75 pkgs. T. Palmer
,, 17 S. F. Waters & Co.
Belgium, 9 Magee, Taylor, & Co.

Sodium Chlorate—
France, 100 pkgs. A. Hughes

Sodium Salicylate—
Holland, 10 pkgs. R. Morrison & Co.

Sodium Sulphate—
Germany, 141 pkgs. T. Palmer

Stearine—
U. States, 16 cks. Beresford & Co.

Sugar of Lead—
Germany, 50 pkgs. T. Palmer

Talc—
E. Indies, £95 Humphrey & Co.
Italy, 40 Davies, Turner, & Co.

Tallow—
Adelaide, 183 cks. Arnati & Harrison
U. States, 20 pkgs. J. M. Wimble
,, 10 Blundell, Spence, & Co.
,, 45 Pinchin, Johnson, & Co.
Melbourne, 160 cks. J. Owen
N. Zealand, 55 ,,
,, 72 N. Z. L. & M. A. Co.
Adelaide, 137 Anning & Cobb
,, 88 Goad, Rigg, & Co.
N. Zealand, 14 Dalgety & Co.
,, 39 W. Remsley & Co.
,, 30 Flack, Chandler, & Co.

Tartaric Acid—
Holland, 13 pkgs. J. Owen
,, 2 B. & F. Wf. Co., Ltd.
,, 28 W. C. Bacon & Co.
,, 30 Middleton & Co.

Ultramarine—
Belgium, 7 cks. Leach & Co.
Holland, 1 pkg. Phillipps & Graves
,, 4 Spies Bros. & Co.
,, 20 Hernu, Peron, & Co.
Belgium, 4 12 W. Harrison & Co.

White Lead—
Belgium, 4 cs. Poupard & Co.
Germany, 55 cks. W. Croft
,, 1 Spies Bros. & Co.
,, 22 M. Ashby, Ltd.
,, 14 W. A. Rose & Co.
Austria, 12 W. Adolphi & Co.
Holland, 15 S. H. Willoughby
Germany, 1 H. Lambert

Zinc White—
Italy, 1 pkg. O'Hara, Mathew, & Co.

Zinc Oxide—
Holland, 625 cks. Soundy & Sons
U. States, 100 M. Ashby, Ltd.
Germany, 50 brls. ,,
,, 18 Beresford & Co.
Holland, 85 M. Ashby, Ltd.

LIVERPOOL.

Week ending April 28th.

Barytes—
Rotterdam, 14 cks.

Benzine—
New York, 500 brls.

Borate of Manganese—
Hamburg, 2 cks.

Chemicals *(otherwise undescribed)*
Rotterdam, 5 cks.

Colours—
Antwerp, 9 brls. J. T. Fletcher & Co.
Rotterdam, 5 cs. 6 cks.

Cottonseed Oil—
New York, 10 brls.

Cream of Tartar—
Bordeaux, 8 cks.
Barcelona, 5 Sachse & Klemn
,, 5 pps.
Tarragona, 5
Rotterdam, 20 kgs.

Dyestuffs *(otherwise undescribed)*
New York, 5 cs. Guion & Co.

Dyestuffs—
Argols
Brindisi, 31 cks. 78 sks.
Portugal, 23 German Bk. of London
Bordeaux, 20

Divi Divi
Hamburg, 27 bgs.

Dyewood Extract
New York, 5 brls.

Myrabolams
Calcutta, 2,000 pkgs.

Sumac
Palermo, 50 brls. 125 bgs.
,, 150 J. Kitchin, Ltd.
Limassol, 281 bgs.

Turmeric
Calcutta, 30 bgs.
Bombay, 662

Valonia
Mediterranean, 1,196 pkgs.

Farina—
Boston, 250 sks.
Fiume, 10
Antwerp, 10 cs.

Glucose—
New York, 50 brls.

Glycerine—
Havre, 250 cs. Cunard S.S. Co., Ltd.
Bordeaux, 135 cks.
Rotterdam, 12 cbs. 8 cs 6 dms.

Kainit—
Hamburg, 1,300 bgs.

Magnesia—
Tampico, 5 cs. Uhtoff & Co.

Manganese Sulphate—
Hamburg, 5 cks.

Naphtha—
New York, 500 brls.

Ochre—
Bordeaux, 47 cks.
Rouen, 134 R. J. Francis & Co.

Oxide of Lime—
New York, 100 brls.

Paint—
Boston, 20 cs. Bahr, Behrend, & Ross
Barcelona, 12 pkgs.

Paraffin Wax—
New York, 215 cs. 30 bdls.

Phosphate—
Aruba, 530 t. Isaac & Samuel

Pitch—
Hamburg, 59 cks.
Marseilles, 102 brls.
Mediterranean, 5 T. Garne

Plumbago—
Genoa, 80 bgs.
Antwerp, 20

Potash—
Hamburg, 20 cks. 11 brls.
Portland, Me., 25
Havre, 1 pkg. Cunard S. S. Co., Ltd.

Pyrites—
Huelva, 4,578 t. Matheson & Co.

Rosin—
Baltimore, 200 brls.
Savannah, 5,365

Salt—
Calcutta, 2 cs.

Saltpetre—
Calcutta, 301 bgs.
Hamburg, 7 brls.

Soap—
Bari, 320 cs.
Antwerp, 1
New York, 4 20 bxs.
Mediterranean, 2 bdls. F. Miniate

Soapstone—
Bordeaux, 100 bgs. 4 cs. G. G. Blackwell

Sodium Nitrate—
Pisagua, 1,400 t.

Sulphur—
Havre, 1 cs. Cunard S. S. Co., Ltd.

Tallow—
Boston, 51 tcs. 270 hds
New York, 100 38 94 pkgs.
Baltimore, 350
Bordeaux, 139 bgs.
Baltimore, 250 46

Talc—
Trieste, 100 bgs. Schroeder & Co.
Fiume, 50 sks.

Tartar—
Ancona, 3 cks.
Messina, 2
Bordeaux, 7

Tartaric Acid—
Rotterdam, 27 cks. 20 kgs.
Tincal—
Calcutta, 232 bgs.
Turpentine—
St. Nazaire, 1 ck.
Antwerp, 4 brls.
Ultramarine—
Rotterdam, 37 cs.
Varnish—
Havre, 2 cs. Cunard S. S. Co., Ltd.
New York, 34 pkgs.
Verdigris—
Bordeaux, 4 hds.
Waste Salt—
Hamburg, 145 bgs
White Lead—
Antwerp, 7 cks.
Rotterdam, 18
Zinc Oxide—
Antwerp, 7 cks.
Rotterdam, 41

HULL.

Week ending April 30th.

Barytes—
Antwerp, 31 cks. Bailey & Leetham
Bremen, 22 T. W. Flint & Co.
" 10
Rotterdam, 11 Gibson Bros.
" 24 Hanger, Watson, & Harris
" 34 Blundell, Spence & Co.
" 23 G. Lawson & Sons
Caoutchouc—
Hamburg, 1 cs. C.M. Lofthouse & Co.
Chemicals *(otherwise undescribed)*
Palermo, 27 cks. Wilson, Sons, & Co., Ld.
Bremen, 3 cs. Veltmann & Co.
Hamburg, 120 cks. 7 pks. Wilson, Sons, & Co., Ld.
Dunkirk, 12 pkgs. "
Colours—
Rotterdam, 2 cks. 5 pks. G. Lawson & Son
Hamburg, 4 Sissons Bros. & Co.
Rotterdam, 10 Blundell, Spence & Co.
Ghent, 20
Bremen, 8 cs. G. Malcolm & Son
" 4 cks. W. S. Merrikin
" 20 Sissons Bros. & Co.
Hamburg, 2 Wilson, Sons, & Co., Ld.
" 4
Antwerp, 3 brls. 45 cks.
Flushing, 24 26 1 pkg. 17 cs. 3 tins. Zeeland S. S. Co.
Rotterdam, 4 pks. 2 cs. Hutchinson & Son
" 35 1 ck. W. & C. L. Ringrose
Amsterdam, 5 cks. Earle & Haller
Cream of Tartar—
Rotterdam, 2 cks. Hutchinson & Son
Cyrolite—
Copenhagen, 3 cks. Wilson, Sons, & Co., Ld.
Dyestuffs—
Alizarine
Rotterdam, 43 pks. W. & C. L. Ringrose
Madder
Rotterdam, 1 ck. M. S. & L. Railway Co.
Myrabolams
Bombay, 4,013 bgs.
Sumac
Trieste, 55 bgs. Wilson, Sons & Co., Ltd.
Palermo, 400 "
Farina—
Ghent, 280 cs.
Stettin, 160 bgs. Wilson, Sons & Co., Ltd.
Harlingen, 500
Glucose—
Rotterdam, 40 bgs. G. Sykes & Son
" 50 Hutchinson & Son
Ochre—
Rouen, 8 cks.
Paint—
Hangesund, 1 bx. Wilson, Sons & Co., Ltd.
Phosphate—
Antwerp, a quantity. Bailey & Leetham
Soap—
Bari, 127 cs. Wilson, Sons & Co., Ltd.
Soda—
Rotterdam, 126 cks. Reckitt & Sons
Sodium Nitrate—
Iquique, 7,188 bgs.
Stearine—
Rotterdam, 10 bgs. Wilson, Sons & Co., Ltd.
Antwerp, 49 pks. "
Sugar of Lead—
Rotterdam, 40 cks. Wilson, Sons & Co., Ltd.
Sulphur—
Catania, 293 pks. Wilson, Sons & Co., Ltd.
" 150 31 t.
Talc—
Fiume, 100 bgs. Wilson, Sons & Co., Ltd.
Tartar—
Bari, 2 cks. Wilson, Sons & Co.,
Barletta, 12 "
Tartaric Acid—
Rotterdam, 6 cks. Hutchinson & Son
Ultramarine—
Rotterdam, 2 cs. 14 cks. Hutchinson & Son
White Lead—
Antwerp, 36 cks. Bailey & Leetham
Rotterdam, 55 Tudor & Sons

GLASGOW.

Week ending May 5th.

Aniline Colours—
Rotterdam, 5 cxs. 20 cks. J. Rankine & Son
Barytes—
Rotterdam, 73 cks. J. Rankine & Son
Colours—
Rotterdam, 1 kg. 4 cks. 1 bx. 1 brl. J. Rankine & Son
Cream of Tartar—
Rotterdam, 13 cks. J. Rankine & Son
Dyestuffs—
Alizarine
Rotterdam, 3 cs. 299 cks.
Argols
Bordeaux, 2 cks.
Indigo
Rotterdam, 1 cs. J. Rankine & Son
Glycerine—
Rotterdam, 3 t. 2 cxs. J. Rankine & Son
Lead Acetate—
Hamburg, 24 cks.
Potash—
Rotterdam, 50 cks. J. Rankine & Son
Rosin—
Wilmington, 8,877 brls. L. & J. M'Lellan
Saltpetre—
Hamburg, 27 brls. 5 cks.
Sodium Nitrate—
Tocopilla, 910 ts. London Bank of Mexico, Ltd.
Talc—
Calcutta, 15 cxs.
Tartar—
Bordeaux, 2 cks.
Oporto, 7
Tartaric Acid—
Rotterdam, 16 cks. J. Rankine & Son
Ultramarine—
Hamburg, 5 cxs.
White Lead—
Rotterdam, 33 cks.
Zinc Oxide—
Rotterdam, 10 cks.

TYNE.

Week ending April 30th.

Glucose—
New York, 295 brls. Furness, Withy, & Co.
Paint—
Philadelphia, 15 brls. Anglo A. Oil Co.
Tallow—
New York, 245 hhds. Furness, Withy, & Co.
Ultramarine—
Rotterdam, 4 cks. Tyne S. S. Co.
Waste Salt—
Hamburg, 140 t.
Zinc Oxide—
Antwerp, 35 cks. Tyne S. S. Co.

GOOLE.

Week ending April 20th.

Alum—
Rotterdam, 14 brls.
Dyestuffs *(otherwise undescribed)*
Boulogne, 5 cs. 9 pkgs. 56 cds.
Dyestuffs—
Alizarine
Rotterdam, 24 pkgs. 15 brls.
Logwood Extract
Rotterdam, 15 brls.
Farina—
Delfszyhl, 500 bgs.
Hamburg, 100
Logwood—
Jamaica, 1,024 t.
Belize, 257
Pho phate—
Ghent, 818 bgs.
Potash—
Dunkirk, 5 cds. 71 dms.
Potassium Muriate—
Hamburg, 135 bgs.
Saltpetre—
Rotterdam, 100 bgs.
Hamburg, 2 cks.
Waste Salt—
Hamburg, 509 cds. 132 t.
Rouen, 33
Zinc Oxide—
Antwerp, 1 brl.

GRIMSBY.

Week ending April 23rd.

Dyestuffs *(otherwise undescribed)*
Dieppe, 10 cds.
Farina—
Hamburg, 125 bgs.
Farinaceous Substances—
Antwerp, 20 pkgs.
Tartar—
Dieppe, 5 cs.
Zinc Ashes—
Antwerp, 9 cds.
Rotterdam, 9 pkgs.

EXPORTS OF CHEMICAL PRODUCTS

OF

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending May 4th.

Acetic Acid—
Wellington, 2 t. 4 c. £45
Acids—
Karachi, 12 drs. £37
Brisbane, 1 ck. 12
Alkali—
Natal, 14 c. £3
Cape Town, 1 t. 7
Otago, 3 3 22
Alum—
Oamaru, 11 kgs. £32
Sydney, 1 t. 6
Dunedin, 10 c. 4
Melbourne, 1 5 c. £8
Ammonia—
Bombay, 4 c. £10
Hamburg, 1 11
Rotterdam, 2 14
N. York, 4 drs. 11
Santos, 2 pkgs. 11
Ammonium Carbonate—
Bordeaux, 10 cks. £27
Cape Town, 1 c. 3
Melbourne, 20 cs. 32
Paris, 3 t. 17 c. 109
B. Ayres, 15 25
Ammonium Chloride—
Hamburg, 15 cks. £88
Ammonium Phosphate—
Adelaide, 2 c. £9
Ammonium Sulphate—
Hamburg, 50 t. 14 c. £550
Barbadoes 50 558
Demerara, 80 4 871
Valencia, 18 180
Ghent, 100 16 1,048
Ostend, 28 13 294
Arsenic—
Napier, 1 t. 5 c. £2
Constantinople, 17 1
Melbourne, 1 14
Borax—
Genoa, 2 t. 6 c. £156
Wellington, 3 5
Hamburg, 8 cks. 68
Constantinople, 1 t. 19 c. 52
Calcium Phosphate—
Amsterdam, 6 c. £42
Carbolic Acid—
Dusseldorf, 120 cks. £543
Treport, 40 cs. 12 cks. 58
Paris, 10 19
Hamburg, 2 drs. 10
Nicolaieff, 100 88
Hamburg, 25 68
Caustic Potash—
Napier, 1 c. £7
Caustic Soda—
Oamaru, 4 c. £5
Napier, 1 7
Melbourne, 10 t. 9 123
Natal, 4 7
Auckland, 10 19 122
Dunedin, 10 24
Cape Town, 5 8
Algoa Bay, 12 18
Chemicals *(otherwise undescribed)*
Wellington, 2 pks. £11
Melbourne, 88 159
Hamburg, 3 c. 35
Brisbane, 93 cs. 158
Seville, 4 15
Valencia, 7 114
Cape Town, 4 pkgs. 10
Sydney, 11 cks. 29
Bombay, 1 cs. 14

ide of Lime—
altar, 13 c. £8

Acid—
edin, 7 c. £63
cholm, 2 17
elona, 1 t. 173
d, 4 35
leton, 1 8
burg, 1 10 255
le, 10 80
yres, 6 50
ork, 1 ck. 22

Products—
iline Dyes
burg, 25 pns. £500
thracene
eldorf, 226 cks. £649
nzol
burg, 5 pns. 51
erdam, 59 dms. 722
euzen, 40 445
is, 20 30 cks. 498
phtha
ey, 2 dms. £25
ourne, 30 23
is, 2 rnlts. 13
25
raffin Wax
ey, 52 cs. £160
tch
kirk, 475 t. £758
a, 36 brls. 41
il, 160 53
tz, 50 16
stantinople, 200 80
verp, 304 494
n, 110 170
on, 200 cks. 113
oe, 60 98
na, 1,576 2,521
kirk, 620 976
ridine Bases
verp, 25 cks. £250
IP
mbo, 25 rnlts. £14
edin, 22 pkgs. 13
a, 40 23
aide, 54 cks. 75
l, 95 55
oe, 400 brls. 200
fuel
is, 50 rnlts. £246

y's Fluid—
ourne, 10 cs. £22

ar Sulphate—
yres, 10 c. £12
edin, 10 8
eilles, 9 t. 19 750

m of Tartar—
edin, 6 c. £27
ey, 2 t. 184
champton, 1 15 160
l, 1 105
ington, 3 14
nsville, 5 25
ourne, 2 171

fectants—
ourne, 20 cks. £60
elona, 3 t. 12 c. 52
ghai, 17 26
bay, 5 13
edin, 7 cs. 55
burg, 25 cks. 125

ers of Sulphur—
ber, 2 t. £23
lington, 1 8
e Town, 23 5 c. 269

arine—
treal, 1 t. 6 c. £48

le—
a, 25 t. £250

ire—
burg, 150 t. £1,612
nt, 8 8 c. 22
dad, 57 15 356
gua, 12 130
re, 10 65
Palmas, 10 38
erara, 96 268
dsberg, 3 1 70
ira, 291 6 2,330
thagena, 24 592
ucia, 616 15 4,885
ao, 2 7
deaux, 10 74
ua, 30 135
rbourg 79 18 240
ersheim, 3 16

Mirbane—
Hamburg, 2 cs. 4 drs. £14
Madras, 3 14

Nitric Acid—
Jersey, 24 carboys £53
Madras, 5 c. 8

Oxygen—
Brussels, 3 c. 34

Phosphorus—
Barbadoes, 2 c. £10

Phosphoric Acid—
Demerara, 3 t. 3 c. £54

Potash—
Melbourne, 1 t. 15 c. £19

Potash Salts—
Townsville, 4 t. £560

Potassium Arseniate—
Lyttleton, 14 c. £13

Potassium Bichromate—
Hobart, 8 c. £22
Sydney, 1 brl. 6
Constantinople, 2 t. 3 67

Potassium Chlorate—
Cape Town, 4 c. £12
Melbourne, 1 t. 44
Seville, 5 14
Madrid, 9 96

Potassium Cyanide—
Shanghai, 5 cks. £28

Potassium Muriate—
Colombo, 16 t. £143

Salammoniac —
Gothenburg, 1 t. 12 c. £52
Salonica, 7 cks. 40
Odessa, 2 t. 4 c. 70

Salicylic Acid —
Toronto, 7 pkgs. £147

Saltpetre—
Sydney, 2 t. 4 c. £45
Napier, 5 6
Dunedin, 1 5 27
Melbourne, 2 43
Natal, 5 6
Wellington, 10 11
Vigo, 3 15 80
Gibraltar, 15 324

Sheep Dip—
Calcutta, 120 drs. £35
Napier, 5 cs. 38
Odessa, 50 150
Boca, 200 150
Pt. Elizabeth, 26 27

Silver Nitrate—
Dunedin, 1 cs. £38

Soda—
Brisbane, 2 c. £6
Mauritius, 12 6
Cape Town, 3 t. 10

Soda Ash—
Auckland, 10 t. 3 c. £74

Soda Crystals—
Adelaide, 16 t. 5 c. £51

Sodium Acetate
Melbourne, 12 t. £178

Sodium Bicarbonate—
Cape Town, 5 c. £4
Melbourne, 6 t. 49
Timaru, 1 7
Durban, 10 4
Rockhampton, 2 10 16
Cossack, 5 4
Brisbane, 2 8 12
Natal, 6 3
Lyttleton, 10 3
Bourgas, 2 14 20

Sulphur—
Mackay, 19 brls. £25
Cape Town, 11 t. 15 c. 221
Townsville, 3 22

Sulphuric Acid—
Trinidad, 2 t. 8 c. £9
Madras, 1 15
Natal, 15 25

Superphosphate—
Mauritius, 75 t. £290
Valencia, 24 96

Tartaric Acid—
Cape Town, 5 c. £28
Melbourne, 10 kgs. 10 113
Wellington, 3 20
Dunedin, 3 18
Sydney, 2 t. 227
Rockhampton, 5 28
Melbourne, 3 10 kgs. 383
Natal, 3 c. 15
B. Ayres, 12 cks. 134

LIVERPOOL.

Week ending May 4th.

Alum—
Montreal, 20 t. 16 c. 1 £125
Constantinople, 4 10 27
Ibrail, 3 13 23
Havana, 7 1 1 29
Malaga, 5 14 0 32
Galatz, 3 17 20

Ammonium Carbonate—
Corunna, 5 c. 1 q. £9
Montreal, 1 t. 2 2 10
Marseilles, 1 1 28
Rotterdam, 10 14
Genoa, 16 3 24

Ammonium Chloride—
Smyrna, 16 c. £26
Bombay, 4 t. 16 162
New York, 18 18 2 q. 561
Smyrna, 2 8 45
Beyrout, 15 24
Marseilles, 2 17 3 98
Montreal, 11 13 253
Alexandretta, 10 17

Ammonium Sulphate—
Antwerp, 50 t. 10 c. £523
Bordeaux, 10 4 2 q. 102
CheribonRoads, 118 15 1 1,080
Las Palmas, 26 5 1 273
Barbadoes, 152 9 5 1,576
Nantes, 25 278
Philadelphia, 50 9 3 533
Valencia, 158 17 2 1,839
Rotterdam, 101 7 2 1,111

Barytes Sulphate—
Trieste, 54 brls. £35

Bleaching Powder—
Baltimore, 181 cks.
Bombay, 5 cs.
Boston, 1,287
Calcutta, 136 77
Chicago, 100 brls. 60 pkgs.
Havana, 20 cs.
Kurrachee, 7
Lisbon, 12 cks.
Montreal, 43
New York, 25 bxs. 724
Stettin, 14
Venice, 10
Ancona, 16
Ghent, 73
Hamburg,
New Orleans, 60 brls.
Odessa, 36
San Sebastian, 92
Santander, 25 10

Bone Ash—
Hamburg, 58 t. 17 c. 2 q. £300

Borax—
Buenos Ayres, 2 t. 9 c. £73
Hamburg, 8 3 q. 13
Rotterdam, 1 18 1 57
Brisbane, 1 28
Sydney, 2 4 0 66
Malta, 4 kgs.
Buenos Ayres, 100 cs.
Hamburg, 1 ck.

Boracic Acid—
Brisbane, 3 c. £6
Buenos Ayres, 9 3 q. 19
Havre, 5 t. 1 2 200
Buenos Ayres, 2 cks.

Calcium Chloride—
Calcutta, 5 t. £11
Odessa, 10 c. 3 q. 23

Calcined Magnesia—
Trieste, 21 lbs. £25
" 1 cs.

Carbolic Acid—
Demerara, 2 cks. £6
Philadelphia, 7 c. 93
Odessa, 4 3 q. 12
Hamburg, 13 t. 3 3 636

Caustic Potash—
Chicago, 8 c. £10

Caustic Soda—
Acajutla, 20 dms.
Alexandria, 32
Amsterdam, 200
Antonnia, 5
Antwerp, 96
Baltimore, 134 brls.
Beyrout, 40
Chicago, 160
Ferrol, 6
Galatz, 115
Genoa, 277
Gibraltar, 15
Hamburg, 5 270
Havana, 96
Hingo, 300
Ibrail, 120
Kurrachee, 4
Lisbon, 75
Maceio, 2
Malta, 30
Melbourne, 36
Montreal, 135 kgs. 201
New York, 150 brls. 380
Oporto, 28
Rangoon, 7
Rio de Janeiro, 50
Rotterdam, 41
Seville, 92
Sydney, 30
Valencia, 20
Valparaiso, 274
Venice, 18
Wellington, 54
Algoa Bay, 4 bxs.
Barcelona, 50
Bari, 106
Bilbao, 100
Bombay, 25 kgs. 13
Boston, 350
Cairo, 11 pns.
Ceara, 70
East London, 5 cs.
Fiume, 30
Honolulu, 10
Madeira, 5
Madrid, 35
Marseilles, 5
Monte Video, 150
Nantes, 152
Newcastle, 72
Para, 6
Pelotas, 150
Penang, 15
Pernambuco, 61
Piræus, 20
Port Elizabeth, 6
Quebec, 62
Rosario, 9
Samarang, 30 kgs.
San Francisco, 20 tcs. 139
San Sebastian, 30
Santander, 26 brls. 34

Chemicals (*otherwise undescribed*)
Bombay, 5 t. 5 c. £183
Marseilles, 11 22
Calcutta, 5 47
Alexandria, 34 brls. 135
Odessa, 4 t. 18 c. 3 q. 160
Galatz, 5 8

Copperas—
Hawre, 2 t. 19 c. 3 q. £7
Piræus, 6 3 14
Galatz, 2 18 6

Copper Sulphate—
Venice, 9 t. £133
Buenos Ayres, 1 17 c. 2 q. 27
Tarragona, 14 13 8 188
Bordeaux, 63 15 3 957
Nantes, 16 18 253
Venice, 3 14 2 85
Barcelona, 24 10 2 373
Leghorn, 21 3 321
Galatz, 14 17 213
Montreal, 2 11 37

Cream of Tartar—
Santa Catherina, 2 q. £5

Disinfectants—
Bombay, 15 t. 12 c. 1 q. and 3 cs. £255

Glycerine—
Hamburg, 9 t. 18 c. £859
Valparaiso, 1 2 q. 10
Montreal, 10 3 16

Guano—
Hamburg, 49 t. 18 c. 3 q. £144

Gypsum —
New York, 36 t. £127

Hydrochloric Acid—
San Juan, 1 t. 15 c. £8
Lead Acetate—
Montreal, 1 t. 16 c. £50
Magnesia—
Havana, 12 cs.
Rio de Janeiro, 5
Magnesium Chloride—
Boston, 10 t. £21
New York, 9 17 27
Bombay, 20 dms.
Boston, 20 brls.
Magnesium Sulphate—
Barbadoes, 2 t. 3 c. £9
Calcutta, 100 kgs.
Montreal, 50 cks.
Manure—
Grand Canary, 10 t. £30
Las Palmas, 6 18
St. Nazaire, 2 15 c. 9
St. John's, Nfld., 7 17
St. Nazaire, 50 1 144
Havre, 50 249
Metallic Sodium—
Tampico, 1 cs.
Oxalic Acid—
Barcelona, 11 c. £16
Paint—
Amapala, 24 cs.
Amsterdam, 9 kgs. 11 dms.
Calcutta, 6 cks. 120 pkgs.
Cape Coast Castle, 224 kgs.
Cape Town, 4 tks.
Half Jack, 2 pkgs.
Iquique, 50 kgs. 91 8 cks.
Kingston, Ont., 49
Kingston, Ja., 150
Maceio, 14 dms.
Maranham, 10 1 cks.
Mayaquez, 13 6
New York, 286 cks. 6 dms.
Old Calabar, 20 kgs. 1 ck.
Para, 20 2 4 brls.
Quebec, 1 cs.
St. Paulo, 15
Seville, 4
Sierra Leone, 30 pkgs. 1 brl. 50 kgs. 3 cks.
Smyrna, 1 cs.
Trieste, 62 dms.
Valparaiso, 62 cks. 12 cs. 60 dms. 15 brls. 500 kgs. 16 dms.
Arica,
Barcelona, 10 brls. 24
Beyrout, 25 kgs.
Bombay, 240 25 cs. 8 cks.
Buenos Ayres, 12 pkgs. 5 cs. 106
Bussorah, 20 kgs 12
Callao, 20 72
Cardenas, 14 pkgs.
Cartagena, Spain, 20 dms.
Ceara, 53
Cienfuegos, 2
Constantinople, 755 kgs.
Demerara, 131
Dunedin, 1 t. 17 c.
Fernando Po, 22
Ferrol, 12 frkns.
Gibraltar, 48 kgs.
Halifax, 8 brls.
Havana, 1 pkg.
Kurrachee, 100 dms.
Sarnaca, 2 cks.
Simassol, 1
Malta, 300 kgs.
Montreal, 10
Parana, 31 16 brls.
Pernambuco, 20
Piræus, 3
Ponce, 18
Rio Grande, 2
Rio de Janeiro, 6
San Juan, 1
Santa Cruz, 150
Santos, 10 cs. 105 25
Talcahuano, 15 24 cks. 32
Yokohama, 20 dms.
Zante, 2
Painters' Colours—
Alexandria, 20 kgs.
Bari, 4 fkns. 20
Boston, 8 cks.
Buenos Ayres, 10
Phosphorus—
San Sebastian, 2 cs. £30
Pitch—
Bahia, 6 brls.
Bilbao, 45
Cette, 189 t. 7 c.
Rouen, 57 7
Valparaiso, 69 4
Vigo, 5½

Potash—
Antwerp, 12 c. 1 q. £16
Monte Video, 1 t. 6 3 45
Potassium Carbonate—
Chicago, 3 t. 11 c. £57
New York, 12 10 200
Potassium Chlorate—
Toronto, 10 c. £25
Corunna, 1 t. 63
Carril, 10 28
Hamburg, 10 30
Gothenburg, 1 10 71
Boston, 5 236
Sydney, 10 500
Buenos Ayres, 1 46
Hiogo, 20 1,003
New York, 14 669
Rotterdam, 3 10 175
St. Petersburg, 30 1,530
Yokohama, 5 285
Genoa, 15 36
Potassium Prussiate—
Montreal, 10 c. £47
Salt—
Ambriz, 14 t.
Antwerp, 50
Cameroons, 104
C. C. Castle, 50
Charlottetown, 2
Demerara, 80
Faroe Islands, 68
Iceland, 343
Kinsembo, 4
Melbourne, 50
Monte Video, 3 4 c.
Montreal, 1,045
Mussera, 5
New York, 130
Rio de Janeiro, 10
Rosario, 6½
Rotterdam, 186
Valparaiso, 156 8 c.
Aalborg, 694
Akassa, 400
Algoa Bay, 10
Antigua, 5
Bahia, 9 c.
Benin, 6
Boston, 310
Buguma, 25
Calcutta, 3,793
Capetown, 109
Cette, 7
Copenhagen, 999
Ghent, 285
Halifax, 368
Hamburg, 98
Kingston, Jam., 5
Loango, 8
New Orleans, 400
Noqui, 81
Old Calabar, 100
Port Elizabeth, 5
Quebec, 500
Saltpond, 25
Shanghai, 8½
Shediac, N.B., 298 3
Sierra Leone, 405 7
Souris, P E.I., 600
Trinidad, 69
Vadso, 330
Warre, 28
Salt Cake—
Philadelphia, 231 t. 5 c. £583
New York, 1 15 2 q. 35
Baltimore, 139 cks.
Philadelphia, 63
Saltpetre—
Barcelona, 4 t. 16 c. 5 q. £80
Ceara, 1 1 3 24
Halifax. 5 5
Sheep Dip—
Buenos Ayres, 1,800 drs. £529
Soap—
Alexandria, 4 cs. 20 bxs. 4 dms.
Barbadoes, 100
Batanga, 50
Bilbao, 1 cks.
Bombay, 810 10
C.C. Castle, 2 cs. 40
Colombo, 3 tcs.
Copenhagen, 140
Falmouth, Ja., 35
Ghent, 10
Half Jack, 20
Iquique, 10 50 3
Kurrachee, 11 cs. 32
N. York, 87 100 9
Panama, 1
Philadelphia, 1 cs.
Port Elizabeth, 775 bxs.
Rotterdam, 11
St. Lucia, 3
San Fernando, 300
Sette Cama, 50
Shanghai, 6,832
Ukaka, 100
Valparaiso, 700 50 kgs. 1 cs.
Accra, 77 2
Aden, 225 bdls.
Akassa, 44 60 dms.
Algoa Bay, 190 100
Barcelona, 9
Calcutta, 20
Capetown, 1,910
Curacao, 495
Demerara, 800
East London, 1,050 30 cs.
Genoa. 76
Grand Canary, 230
Guayaquil, 200
Kingston, Jam., 850
Lagos, 285
Livingstone, 1
Malta, 30
Montreal, 150
Port Natal, 1086
St. Croix, 250
St. Thomas, W.I., 400
Surinam, 175
Teneriffe, 190
Toronto, 400
Trinidad, 1,100
Warre. 200
Soda—
Callao, 50 kgs.
Piræus, 25 brls.
Soda Alkali—
Ancona, 40 brls.
Barcelona, 100
Buenos Ayres, 34
Buffalo, 60
Leghorn, 66
Melbourne, 20
Naples, 10
Odessa, 50
Smyrna, 50
Syra, 20
Soda Ash—
Baltimore, 754 cks.
Boston, 128 tcs. 2,137 1,996 bgs.
Buenos Ayres, 521 brls.
Callao, 99
Maranham, 35
Montreal, 155
New York, 300 600 1,266 tcs.
Philadelphia, 503 200 259
Rio de Janeiro, 350 brls. 60 kgs. 3
St. John's, Nfld., 1 ck.
Smyrna, 250 brls.
Varna, 100
Antwerp, 5
Canada, 38 tcs. 576 bgs.
Ceara, 10
Constantinople, 10 cks.
Havana, 4
Madeira, 6
Melbourne, 267
Oporto, 10
Pelotas, 200 brls.
Rosario, 9 dms.
San Francisco, 65 tcs.
Soda Crystals—
Bombay, 650 kgs.
Boston, 280 brls.
Hong Kong, 10 cks.
Honolulu, 10
Lisbon, 20
Montreal, 200 425
Ontario, 30 28
Port Natal, 20
Quebec, 200
Toronto, 25
Venice, 20
Canada, 366
Malta, 20
Montreal, 50
Valparaiso, 100
Soda Salts—
Montreal, 9 t. 13 c. 2 q. £258
,, 27 cks.
Sodium Biborate—
Buenos Ayress, 2 t. 8 c. 3 q. £88
Rotterdam, 1 3 0 35
Hamburg, 15 14 1 471
Buenos Ayres, 15 cs.
Sodium Bicarbonate—
Buenos Ayres, 50 kgs. 20 cks.
Genoa, 40
Hiogo, 200
Kingston, Ja., 40
Montreal, 2,300 20
Quebec, 50
Rotterdam, 51
Toronto, 25
Ancona, 25
Barcelona, 75
Bilbao, 108
Bombay, 150
Galatz, 40
Halifax, 105
Hamburg, 70 14 cks
Havre, 120
Marseilles, 4
Melbourne, 254 18
Naples, 330
Newcastle, 230
Odessa, 100
Samarang, 5
Valparaiso, 10
Vera Cruz, 10 brls.
Sodium Bichromate—
Antwerp, 50 kgs. 7 cks.
Sodium Carbonate—
Boston, 84 brls.
New York, 112
Sodium Chlorate—
Rotterdam, 4 c.
Antwerp, 5 t.
,, 30 k
Rotterdam, 24
Hamburg, 1
Sodium Hyposulphite—
Montreal, 19 c. 2 q.
Naples, 1 t. 6
Sodium Silicate—
Ibrail, 26 cks.
Lisbon, 26
Montreal, 32
Piræus, 20
Rotterdam, 10
Salonica, 20
Barcelona, 100 brls.
Corfu, 10
Corunna, 17
Madrid, 135
Port Elizabeth. 6
Sodium Sulphate—
Leghorn, 2 t. 13 c. 2 q.
,, 16 brls.
Sodium Supersulphate—
Vera Cruz, 1 t.
Strontia—
Rotterdam, 5 t. 18 c.
Sulphur—
Montreal, 1 t. 6 c.
Calcutta, 5 19
St. John's, N.B., 3 17 2 q.
St. Nazaire, 800 bgs.
Montreal, 67 74 brls.
Calcutta, 6
Honolulu, 10 c.
Sulphuric Acid—
Rio de Janeiro, 16 c. 1 q.
Boston, 2 t. 4 1
Monte Video, 1 10
Colombo, 24 cs.
Rio de Janeiro, 1 12 1
Tallow—
Cuidad Bollivar, 1 ck.
Pernambuco, 10
Stettin, 14
Alexandria, 12 brls.
Bombay, 2
Gothenburg, 22
Pernambuco, 10 cs.
Tar—
Charlottetown, 22 brls.
Chicago, 1 ck.
Honolulu, 10
Tartar—
Hamburg, 1 t.
Tartaric Acid—
Valparaiso, 5 cs.
Montreal, 1 t. 12 c.
Varnish—
Bombay, 2 cks.
Odessa, 5 cs.
Buenos Ayres, 6
Loango, 4 brls.
Zinc Chloride—
Bombay, 8 t. 3 q.
Calcutta, 1 6 c.

GLASGOW.

Week ending May 5th.

Acetic Acid—
Quebec,
Ammonium Sulphate—
Valencia, 177 t. 5½ c.
N. York, 4 18½
Barbadoes, 89 18½
Trinidad, 113 2¼
Demerara, 55 4¼
Aniline—
Oporto, 21¾ c.
Anfline Oil—
Oporto, 11½

me—
, 41½ c. £67
, 23 t. 750
100 165
p, 108 19½ 436
10 t. 4½ 311

—
irne, 23 c. £33 15s.

te Oil—
, 25 t. £45

ffs *(otherwise undescribed)*
£52
:, 28½ c. £21

ffs—
arine
, 9 c. £32

—
'k, 12 t. £108
loes, 25 1 c. 276
ara, 50 550

Acetate—
c, 3 t. 19¾ c. £61

d Oil—
Video, 45 c. £52
Colony, 5 18 126
Kong, 40 57
ad, 625 glns. 54

nese—
rk, 205 c.

e—
loes, 69 t. £759

ha—
, 15 t. 17 c. £270

—
356 c. £360
lony, 28
tar, 14 22
rk, 232 185
loes, 28 £40 14s.

ers' Colours—
61½ c. £57
rdam, 28 cks. 143
erdam, 2 £14 15s.
s, £177
, 8½ c. 138
lad, 45 £43 16s.

fin Wax—
o, 1 t. £24
rt, 38 10 c. 1,099
ey, 2 9¼ 75
a, 8 15¼ 302
n, 1 19½ 65
, 50 14¼ 1,470
2 75

—
ire, 899 t. £1,348 10s.
ey, 325 932
erp, 100 19 c. 126

sium Bichromate—
dey, 22½ c. £33
enburg, 4 t. 6¾ 135
erdam, 12 cks. 160
ey, 2 t. 7¾ c. 70
ia, 1 2½ 35
ec, 83 145
, 43½ 75

sium Prussiate—
terdam, 1 ck.

l Oil—
stiania, 5 brls. £12
erdam, 40 77
olony, 187¼ c. 66
ourne, 73 26

ylic Acid—
dad, ¾ c. £30

—
, 3 t. 17¾ c. £35

Cake—
erp, 255 t. 7 c. £510

—
d, 1 t. 9 c. £23
, 9 2 74
olony, 22
dad, 5½ 92

—
rup, 215 t.

m Bichromate—
, 283¾ c. £325
ork, 327 420

Sodium Sulphate—
Christiania, 5 cks. £5
Sulphuric Acid—
Demerara, £35
Superphosphate of Lime—
Cullera, 59 t £147
Tallow—
Rotterdam, 95 c. £136
Tar—
Turkey. 248¾ t. £486
Varnish—
Christiania, 10 brls. £7
White Lead—
Boston, 17¾ c. £19
C. Colony, 76
Fremantle, 2 t. 35
Sydney, 64¼ c. 67

HULL.

Week ending April 30th.

Alum—
Copenhagen, 5 cks.
San Francisco, 102
Bleaching Powder—
Bergen, 25 cks.
Venice, 25
Chemicals *(otherwise undescribed)*
Antwerp, 3 cks.
Constantinople, 27 60 brls.
Christiania, 34
Copenhagen, 2 20 pks.
Dunkirk, 20
Danzig, 1 cs. 25 cks. 29 pks.
Gothenburg, 64 25
Harlingen, 8
Hamburg, 270 11
Konigsberg, 5
N. York. 50 250 110 kgs.
Odessa, 3 cks. 30 brls.
Reval, 5 cs. 40 cks. 50 kgs.
Rouen, 1
Stettin, 3 cs. 45
Stockholm, 33
Trieste, 11
Venice, 31 5
Caustic Soda—
Odessa, 17 dms.
Reval, 10
Stettin, 52
Venice, 60
Cottonseed Oil—
Amsterdam, 302 c.
Antwerp, 300
Bremen, 170
Bergen, 87
Bordeaux, 208
Drontheim, 41
Fiume, 99
Hamburg, 1,407
Rotterdam, 1,555
Trieste, 203
Copper Sulphate—
Konigsberg, 23 cks.
Creosote—
Christiania, 2 cks.
Copenhagen, 5
Odessa, 150
Portsgrund, 375 brls.
Dyestuffs *(otherwise undescribed)*
Christiania, 116 bgs.
Dunkirk, 1 ck.
Danzig, 2
Hamburg, 1 cs.
Dyestuffs—
Alizarine
New York, 10 cks
Linseed Oil—
Antwerp, 7 c.
Aalesund, 34
Bremen, 52
Bergen, 132
Brisbane, 881
Bordeaux, 34
Christiania, 491
Drontheim, 160
Danzig, 60
Fiume, 82
Gothenburg, 7
Hamburg, 665
Rotterdam, 40
Stockholm, 200
Venice, 41
Manure—
Dunkirk, 257 bgs.
Danzig, 20 t.
Ghent, 228
Rotterdam, 50
Mineral White—
Antwerp, 10 t.
Naphtha—
Rotterdam, 21 dms.
Ochre—
Bremen, 5 cks.
Hamburg, 7
Konigsberg, 11
Paint—
Fiume, 2 cks.
Painters' Colours—
Amsterdam, 1 cs.
Antwerp, 5 9 cks. 70 ks.
Aalesund, 1
Brisbane, 7 27 88
80 dms.
Christiania, 128 pks.
Christiansand, 64 pkgs.
Copenhagen, 1 cs. 6 cks.
Drontheim, 186 pks.
Dunkirk, 2 cks. 1 pkg.
Gothenburg, 9
Hamburg, 3
Konigsberg, 47
N. York, 30
Odessa, 140
Rouen, 4 cs. 4 cks.
Rotterdam, 7 42
Stettin, 10
Stockholm, 20 dms.
Trieste, 8
Venice, 5
Pitch—
Antwerp, 144 t.
New York, 4 cks.
Odessa, 100 brls
Venice, 300
Salt—
Prince Edward Island, 40 t.
Soap—
Bergen, 20 cs.
Tallow—
Harlingen, 11 cks.
Rotterdam, 49
Tar—
Bremen, 6 cks.
Constantinople, 50 brls.
Copenhagen, 13
Danzig, 5
Gothenburg, 300
Hamburg, 11
Reval, 1 cs.
Rotterdam, 13
Stettin, 5
Stockholm, 1 dm.
Varnish—
Copenhagen, 2 cs. 4 cks.
Gothenburg, 1
Hamburg, 1
Rotterdam, 1 ck.

TYNE.

Week ending April 30th.

Acetate of Lime—
Danzig, 25 t. 9 c.
Alkali—
Gothenburg, 5 t.
Christiania, 8
Nykjobing, 2 4 c.
Copenhagen, 2 12
N. York, 232 73
Antwerp, 3 16
Alum—
Copenhagen, 2 t. 5 c.
Ammonium Carbonate—
Hamburg, 12 c.
Vienna do Castello, 1
Ammonium Sulphate—
Venice, 15t. 2c.
Antimony—
N. York, 45 t.
Arsenic—
Vianno do Castello, 3 c.
Copenhagen, 7
Venice, 26 t. 7
Barium Binoxide—
Rouen, 16 t. 8 c.
Barytes Carbonate—
Hamburg, 10 t.
Danzig, 5 5 c.
Rouen, 32 6
Bleaching Powder—
Danzig. 88 t. 16 c.
Rotterdam, 2 12
Venice, 20
Rouen, 5 3
Antwerp, 40 8
Hamburg, 11 19
Caustic Soda—
Gothenburg, 4 t. 18 c.
Antwerp, 7 18
Danzig, 20 6
Christiania, 4 19
Rotterdam, 11 5
Copenhagen, 1 13
Venice, 13 18
Rouen, 8 8
N. York, 72 10
Antwerp, 7 10
Hamburg, 29 12
Dyestuffs—
Alizarine
N. York, 4 t. 14 c.
Anthracene
Rotterdam, 23 t. 11 c.
Epsom Salts—
Vianno do Castello, 1 c.
Linseed Oil—
Christiania, 3 c.
Litharge—
Gothenburg, 2 t. 14 c.
Vianno do Castello, 6
Venice, 5
Hamburg, 4 10
Magnesia—
Antwerp, 1 c.
Danzig, 3½ qrs.
Venice, 2
Hamburg, 19
Magnesium Carbonate—
N. York, 2 t. 4 c.
Ochre—
Vianno do Castello, 5 c.
Paint—
Antwerp, 1 c.
Hamburg, 1 t. 14
Gothenburg, 1
N. York, 14 7
Painters' Colours—
Copenhagen, 11 t. 5 c.
Pitch—
Christiania, 8 t. 1 c.
Salammoniac—
Danzig, 1 t. 2 c.
Soap—
Bergen, 1½ c.
Soda Ash—
Gothenburg, 47 t. 18 c.
Danzig, 60 9
Christiania, 5
Venice, 45 16
Sodium Chlorate—
Danzig, 1 t. 1 c.
Sodium Hyposulphite—
Antwerp, 2 t.
Sulphur—
Gothenburg, 95 t.
Christiania, 75
Rotterdam, 210
Antwerp, 12 10 c.
Superphosphate—
Laurvig, 10 t. 10 c.

GOOLE.

Week ending April 20th.

Alum—
Rotterdam, 11 cds.
Benzol—
Rotterdam, 20 cds.
Chemicals *(otherwise undescribed)*
Rotterdam, 24 cds.
Rouen, 1
Coal Products *(otherwise undesc'd.)*
Ghent, 4 cds.
Rotterdam, 209
Dyestuffs *(otherwise undescribed)*.
Ghent, 1 dm.
Manure—
Rouen, 126 bgs.
Pitch—
Antwerp, 190 t.

GRIMSBY.

Week ending April 23rd.

Chemicals *(otherwise undescribed.)*
Hamburg, 6 cds. 34 dms.
Coal Products *(otherwise undesc'd.)*
Dieppe, 90 cds.
Manure—
Esbjerg, 700 bgs.
Pitch—
Antwerp, 52 t.

PRICES CURRENT.

WEDNESDAY, May 11th, 1892.

Prepared by Higginbottom and Co., 116, Portland Street, Manchester.

The values stated are f.o.r. at maker's works, or at usual ports of shipment in U.K. The price in different localities may vary.

	£	s.	d.
Acids :—			
Acetic, 25 °/₀ and 40 °/₀ .. .. per cwt.	7/- & 11/-		
,, Glacial .. .. ,,	50/-		
Arsenic S.G., 2000° .. .. ,,	0	13	6
Fluoric .. .. per lb.	0	0	3¼
Muriatic (Tower Salts), 30° Tw. .. .. .. per bottle	0	0	10
,, (Cylinder), 30° Tw. .. .. ,,	0	3	0
Nitric 80° Tw. .. .. per lb.	0	0	2¼
Nitrous .. .. ,,	0	0	1¾
Oxalic .. .. nett ,,	0	0	3
Phosphoric, 1750° .. .. ,,	0	1	2½
Picric .. .. ,,	0	0	10¼
Sulphuric (fuming 50 °/₀) .. .. per ton	15	10	0
,, (monohydrate) .. .. ,,	5	10	0
,, (Pyrites, 168°) .. .. ,,	3	5	0
,, (,, 150°) .. .. ,,	1	5	0
,, (free from arsenic, 145°) .. .. .. ,,	1	7	6
Sulphurous (solution) .. .. ,,	2	15	0
Tannic (pure) .. .. per lb.	0	1	2
Tartaric .. .. ,,	0	0	11¾
Arsenic, white powdered .. .. nett per ton	10	17	6
Alum (loose lump) .. .. ,,	5	5	0
Alumina Sulphate (pure) .. .. ,,	5	0	0
,, ,, (medium qualities) .. .. .. ,,	4	15	0
Aluminium .. .. per lb. 2s. 8d. to	0	3	2
Ammonia, ·880 = 28° .. .. per lb.	0	0	3
,, ·=24° .. .. ,,	0	0	1¾
,, Carbonate .. .. nett ,,	0	0	3¼
,, Muriate .. .. per ton	21	0	0
,, ,, (sal-ammoniac) 1st & 2nd .. per cwt.	35/- & 33/-		
,, Nitrate .. .. per ton	40	0	0
,, Phosphate .. .. per lb.	0	0	10½
,, Sulphate (grey) London .. .. .. per ton	10	1	3
,, ,, (grey) Hull .. .. ,,	10	1	0
Aniline Oil (pure) .. .. per lb.	0	0	6¾
Aniline Salt ,, ... ,,	0	0	6¼
Antimony .. .. per ton	45	10	0
,, (tartar emetic) .. .. per lb.	0	1	0
,, (golden sulphide) .. .. ,,	0	0	10
Barium Chloride .. .. per ton	7	10	0
,, Carbonate (native) .. .. ,,	3	10	0
,, Sulphate (native levigated) .. .. .. ,,	45/- to 75/-		
Bleaching Powder, 35 % .. .. nett ,,	7	10	0
,, Liquor, 7 % .. .. ,,	2	10	0
Bisuldhide of Carbon .. .. ,,	11	15	0
Chromium Acetate (crystal) .. .. per lb.	0	0	6
Calcium Chloride .. .. per ton	2	5	0
China Clay (at Runcorn) in bulk .. .. .. ,,	17/6 to 35/-		
Coal Tar Dyes :—			
Alizarine (artificial) 20% .. .. per lb.	0	0	8¾
Magenta .. .. ,,	0	3	9
Coal Tar Products			
Anthracene, 30 % A, f.o.b. London .. per unit per cwt.	0	1	2½
Benzol, 90 % nominal .. .. .. per gallon	0	1	7
,, 50/90 ,, ... ,,	0	1	3
Carbolic Acid (crystallised 40°) .. .. .. per lb.	0	0	4⅞
,, (crude 60°) .. .. per gallon	0	1	2
Creosote (ordinary) .. .. ,,	0	0	1
,, (filtered for Lucigen light) .. .. ,,	0	0	2
Crude Naphtha 30 % @ 120° C. .. .. .. ,,	0	0	9
Grease Oils, 22° Tw. .. .. per ton	2	2	0
Pitch, f.o.b. Liverpool or Garston .. .. .. ,,	1	8	0
Solvent Naphtha, 90 % at 160° .. .. .. per gallon	0	0	11
Coke-oven Oils (crude) .. .. ,,	0	0	3
Copper .. .. per ton	46	5	0
,, Sulphate .. .. ,,	15	10	0
,, Oxide (copper scales) .. .. ,,	45	0	0
Glycerine (crude) .. .. ,,	13	0	0
,, (distilled S.G. 1250°) .. .. ,,	45	0	0
Iodine .. .. nett, per oz.	0	0	9
Iron Sulphate (copperas) .. .. per ton	1	12	6
,, Sulphide (antimony slag) .. .. ,,	2	0	0
Lead (sheet) for cash .. .. ,,	12	0	0
,, Litharge Flake (ex ship) .. .. ,,	14	5	0
,, Acetate (white ,,) .. .. ,,	25	10	0
,, ,, (brown ,,) .. .. ,,	17	10	0
,, Carbonate (white lead) pure .. .. .. ,,	20	0	0
Nitrate .. .. ,,	20		0

	£	s.	d.
Lime, Acetate (brown) .. .. per ton	5	17	6
,, ,, (grey) .. .. ,,	10	5	0
Magnesium (ribbon and wire) .. .. per oz.	0	2	3
,, Chloride (ex ship) .. .. per ton	2	7	6
,, Carbonate .. .. per cwt.	1	17	6
,, Hydrate .. .. per ton.	17	0	0
,, Sulphate (Epsom Salts) .. .. per ton	2	19	0
Manganese, Sulphate .. .. ,,	17	15	0
,, Borate .. .. per cwt.	2	12	6
,, Ore, 70 % .. .. per ton	4	5	0
Methylated Spirit, 61° O.P. .. .. per gallon	0	2	6
Naphtha (Wood), Solvent .. .. ,,	0	4	6
,, ,, Miscible, 60° O.P. .. .. .. ,,	0	4	5
Oils :—			
Cotton-seed .. .. per ton	19	10	0
Linseed .. .. ,,	20	0	0
Lubricating, Scotch, 890°—895° .. .. .. ,,	7	5	0
Petroleum, Russian .. .. per gallon	0	0	4½
,, American .. .. ,,	0	0	5½
Potassium (metal) .. .. per oz.	0	3	7
,, Bichromate .. .. per lb.	0	0	3¾
,, Carbonate, 90% (ex ship) .. .. .. per ton	18	0	0
,, Chlorate .. .. per lb.	0	0	7
,, Cyanide, 98% .. .. ,,	0	2	2
,, Hydrate (Caustic Potash) 80/85 % .. per ton	22	10	0
,, ,, (Caustic Potash) 75/80 % .. ,,	21	0	0
,, ,, (Caustic Potash) 70/75 % .. ,,	20	15	0
,, Nitrate (refined) .. .. per cwt.	1	2	6
,, Permanganate .. .. per cwt.	3	10	0
,, Prussiate Yellow .. .. per lb.	0	0	10
,, Sulphate, 90 % (ex ship) .. .. .. per ton	9	15	0
,, Muriate, 80 % (do.) .. .. .. ,,	7	17	6
Silver (metal) .. .. per oz.	0	3	3⅞
,, Nitrate .. .. ,,	0	2	10
Sodium (metal) .. .. per lb.	0	3	4
,, Carb. (refined Soda-ash) 48 % .. nett per ton	6	2	6
,, ,, (Caustic Soda-ash) 48 % . ,, ,,	5	5	0
,, ,, (Carb. Soda-ash) 48% .. .. ,, ,,	5	7	6
,, ,, (Carb. Soda-ash) 58 % .. .. ,, ,,	6	5	0
,, ,, (Soda Crystals) .. .. .. ,, ,,	3	9	0
,, Acetate (ex-ship) .. .. ,,	16	5	0
,, Arseniate, 45 % .. .. ,,	10	10	0
,, Chlorate .. .. per lb.	0	0	8
,, Borate (Borax) .. .. nett, per ton.	29	10	0
,, Bichromate .. .. per lb.	0	0	2¾
,, Hydrate (77 % Caustic Soda) (f.o.b.) nett pr. ton (10 ton lots)	11	10	0
,, ,, (74 % Caustic Soda) ,, ,, ,, (10 ton lots)	11	10	0
,, ,, (70 % Caustic Soda) ,, ,, ,, (10 ton lots)	10	10	0
,, ,, (60 % Caustic Soda) .. ,, ,, (10 ton lots)	9	7	6
,, ,, (60 % Caustic Soda, cream) (f.o.b.) ,, (10 ton lots)	9	2	6
,, Bicarbonate .. .. ,,	6	12	6
,, Hyposulphite .. .. ,,	7	15	0
,, Manganate, 25% .. .. ,,	11	10	0
,, Nitrate (95 %) ex-ship Liverpool .. .. per cwt.	0	8	7½
,, Nitrite, 98 % .. .. per ton	30	0	0
,, Phosphate .. .. ,,	15	10	0
,, Prussiate .. .. per lb.	0	0	7¾
,, Silicate (glass) .. .. per ton	5	7	6
,, ,, (liquid, 100° Tw.) .. .. .. ,,	4	5	0
,, Stannate, 40 % .. .. per cwt.	3	5	0
,, Sulphate (Salt-cake) .. .. per ton.	1	16	6
,, ,, (Glauber's Salts) .. .. ,,	1	15	0
,, Sulphide .. .. ,,	7	15	0
,, Sulphite .. .. ,,	6	12	6
Strontium Hydrate, 100% .. .. ,,	8	10	0
Sulphocyanide Ammonium, 95 % .. .. per lb.	0	0	7½
,, Barium, 95 % .. .. ,,	0	0	5
,, Potassium .. .. ,,	0	0	7¾
Sulphur (Flowers) .. .. per ton.	8	10	0
,, (Roll Brimstone) .. .. ,,	6	10	0
,, Brimstone : Best Quality (nominal) .. ,,	5	0	0
Superphosphate of Lime (26 %) .. .. ,,	2	7	6
Tallow .. .. ,,	26	10	0
Tin (English Ingots) .. .. ,,	97	10	0
,, Crystals .. .. per lb.	0	0	6¾
Zinc (Spelter) .. .. per ton	22	10	0
,, Chloride (solution, 96° Tw.) .. .. .. ,,	6	10	0

THE

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ertisements intended for insertion in the current week's issue d reach the office by **Wednesday morning** at the latest.

A NEW ALKALI BILL.

WE suppose it is necessary in all cases to pass an imperfect Bill to an Act of Parliament for some wise reason unknown to the lay mind. As a matter of fact, whenever a Bill is introduced to Parliament, it there meets with such determined opposition from monopolists that any sting it may happen to possess is generally taken out of it before it has passed the Committee stage—so it has been with the Alkali Acts which are now in force.

At first, the gas aimed at was muriatic acid, and the agitation which resulted in the first Act was fermenting at a time when a very large proportion of the muriatic acid gas was turned out into the atmosphere without any attempt being made to hold it back. When that Bill was presented to Parliament, the usual cry of driving trade away from the district was raised; and the opponents of the Bill laid great stress upon what they called a fact, that no means had been devised, or could be devised, to arrest the muriatic acid which came from the decomposition of salt. Mr. Gossage had turned an old windmill into a muriatic acid condensing tower. He had taken the inside out of this windmill and filled it up with brushwood, down which he showered a large volume of water, passing the gas from his decomposing pots in at the bottom of the windmill, and allowing them to find an exit at the top. In course of time, the mortar used for building the windmill dissolved away, and the structure collapsed, and upon this experiment the opponents to the first Bill founded their arguments. Then came Mr. Shanks, from Ireland, and erected stone towers in the St. Helens district, and from that day the condensation of muriatic acid presented no difficulty whatever.

It has been stated over and over again that there is not a single Act of Parliament a coach and four could not be driven through. So it was with the Alkali Act, and we believe that even to the present day, if any manufacturer produced muriatic gas by the decomposition of chloride of magnesium with sulphuric acid, and turned the whole of the gas into the atmosphere, he would not come under the operation of the Alkali, &c., Works Regulation Act. It is true that the amended Act of 1874 brought wet copper works under the operation of the ordinary Act, and the 1874 Act also provided that every "alkali works should use the best practical means of preventing the discharge into the atmosphere of all noxious gases arising from such work." In spite of this, it has been argued, and apparently with success, that the new sulphur recovery process was outside the pale of all the Alkali Acts up to date. We cannot see the reasonableness of any such contention, but owing to the enormous volumes of sulphuretted hydrogen and sulphurous acid which are now being sent out from the sulphur recovery works, it has been deemed necessary to apply to Parliament for further powers.

It is against the policy of the present Bill we have now to contend; instead of scheduling the gases known to be nox-

ious, the schedule to the Bill prescribes the inspection of certain works and we most strongly object to the present means about to be adopted for the suppression of these nuisances. It would have been much easier to say that all works of whatever kind emitting sulphuretted hydrogen in any process or processes should come under inspection. As we have said, the proverbial coach and four may be driven through the present Bill if it should become an Act. Part I. of the schedule is aimed at sulphuretted hydrogen, and yet it is quite open for anyone to deoxidise sulphate of lime, such as Rawes proposed to do (and even erected works near Newark, for the purpose) and would allow him to send out one-half of his sulphuretted hydrogen without coming under the present intended legislation.

Part II. of the schedule is aimed at the suppression of acid gases arising from many industries not now under inspection, but even here not only a coach and four, but a well-loaded hay waggon might easily be driven through. No. 6 deals with the sulphurous and sulphuric acid arising from venetian red works. No. 7 deals with sulphuric acid driven off when the deposit from sulphuric acid chambers is smelted. No. 8 deals with arsenic works, and we presume is intended to suppress arsenical vapours and also the nitrous fumes evolved in the manufacture of the higher oxygen compounds of arsenic. Nitrate and chloride of iron works are dealt with in No. 9, and we presume that if a per-sulphate of iron was made and nitrous fumes evolved, these would be outside the operation of the Act. No. 10 deals with those manufacturers of muriatic acid not defined by the Alkali, etc., Works Regulation Act of 1881. No. 11, relating to what are called carbonising works, that is to say, where muriatic acid is used for the separation of silk or woollen fibre from vegetable fibre, and it is strange that though in No. 10 muriatic acid is simply scheduled, yet in No. 11 it is stated that it must be muriatic acid *gas*, thus giving the manufacturer an opportunity of modifying his process and so escaping inspection. No. 12 is an anomaly. The gas there aimed at is no doubt sulphuretted hydrogen, and yet it is placed in Part II instead of Part I. Surely there is some oversight here, and while on the subject we may say that this clause is so drafted as to include gas works who use the St. John process, street paving, tarpaulin works, and asphalte works, while according to the provisions of this Bill, no one could have a tar pot in which to boil pipes or to heat tar for coating his pailings without a Local Government Board Inspector being present to satisfy the idiosyncrasies of the neighbours.

There are one or two very great omissions in Part II. We find no mention whatever of copper works and glass works, and if this Bill passes into law without these two works being inserted, it will be the greatest injustice to those chemical manufacturers who happen to have their works in the vicinity. At present there is a very glaring case which may be cited as an instance. At Castleford, in Yorkshire, there are two or three chemical works; one of these works manufactures the salt cake which is employed in the fourteen or fifteen glass works there. As the law stands now the alkali manufacturer is called upon to condense at least 95% of the gases evolved in the calcination of his copper ore, the sulphur of which he turns into vitriol, and about the same quantity of muriatic acid which is evolved from the salt. The result of this operation is sulphate of soda which the manufacturer sells to the glass works immediately surrounding him. In the manufacture of glass from this material the whole of this 95% of sulphuric acid which the legislature has forbidden the alkali manufacturer to put into the air, is evolved without let or hindrance by the glass works, and these glass works not under inspection, the neighbours very naturally say cannot be injurious to the surroundings, and the whole damage done to the vegetation in the neighbourhood down to the poor chemical manufacturer, who perhaps tributes about 2% to the glass makers' 98%. If our l tors think this justice, then the sooner we give up arg the better.

What we have said respecting glass works may also with still greater force to the dry smelters of copper, a are much surprised to find that No. 13, part 2, of this sch to the present Bill seeks to include zinc works and copper conspicuous by its absence. We do not wish pute motives, far from it; but it would be well for in charge of the Bill to explain why copper has been le We suppose the usual cry will be raised, that the trad be driven from our shores, that the workmen will be t out of work, and that ruination would fall through any at to make the copper works condense the many hu thousands of tons of oil of vitroil which they now showe over the face of the country; in fact, the acids let loo the atmosphere by the alkali works form only a minute p tion of those emitted by the copper works, and we fail why the greatest offenders should be left untouched.

There is only one method of dealing with these gase that is to specify each one by name, and any manufa whatever who happens to evolve any of them in any p whatsoever should be brought at once under inspe Inspection should have no terrors for a man who wis carry on his works with as little nuisance to his neighb is possible.

It is assumed in some quarters that the results whicl been obtained under the Alkali Acts would have obtained just as well without them. We are not opinion. The Alkali Acts have succeeded on account moderation of the inspectors. In reality they have ac consulting chemists to the works they have inspected. have given the results of their experience to the own the works and those in charge under them, and the res been an amelioration which we believe could not hav reached in any other way. There are some meml sanitary associations who believe it would have beer better if numerous prosecutions had taken place inst adopting a persuasive method which has all characterised the administration of these Acts. Stud human nature will know very well that more can be d persuasion than by force, and this is the reason w Smoke Acts and other public health measures have failure. Nothing irritates a manufacturer more than hauled up in a police court in company with a few "dr being brought before a magistrate who has only moments at his disposal for dealing with such intricate and as a rule being fined for offences which in many would have been considered non-proven by a higher In our opinion the Smoke Acts would have been a many years ago if the defendants had been deal persuasively.

The urgency of the matter has caused us to mak somewhat lengthy remarks upon this Bill to ame Alkali, &c., Regulation Acts of 1881. A copy of the B be found on another page, and we hope that all thos ested in the matter will use their utmost endeavou their member of Parliament, to secure that no alterati be made in the law which is not on the lines we have indicated.

THE INSTITUTE OF CHEMISTRY.

THE SPRING CONFERENCE.

the last public assembly of the Institute of Chemistry was interesting from the polemical vigour displayed thereat, the present gathering no less so from the unusual smoothness of the proceedings and the ual tolerance displayed by all concerned. The fact is that a good of ill-feeling has been got rid of by dint of outspoken discussion, the fighting members on both sides have come to know each other er—a knowledge attended, as it should be, with increased mutual ect and forbearance.

rofessor Tilden, in opening the proceedings, said that no great rest had been taken in the subject for discussion, to judge by the ity of papers presented. It was true that Dr. Wertheimer, of ol, had promised them a communication, but up to the present he not heard of its arrival. It turned out, however, that Dr. Wertheimer present, but on account of the official acceptance of his pro- d paper having been delayed, had had little opportunity of putting to formal shape. In spite of this he gave the meeting the benefit ose ideas which had led him to offer it for perusal. The subject n for discussion was The Regulations for the Admission of Candi- s for the Associateship of the Institute, and Dr. Wertheimer did l service in pointing out that, with the exception of the teaching tution with which he was connected, no technical school was itted by the Council as fitted for preparing candidates for the ciateship, although their countenance was given to various pro- al university colleges which were in no way better equipped for work of instruction. It is proper to add that the author made her good point in calling attention to the enormous proportion of idates who passed at the last examination of the Institute, 63 out 5 getting through. It will be remembered that we exposed the tisfactory conditions under which, at least, the London portion of examination was conducted; it is evident that, conscious of the ulties thrown in the way of candidates, the examiners must have a lenient view of their shortcomings. This is bare justice, but it grettable that the necessity should have arisen.

short note by Mr. Kingzett, advocating the reception of all candi- who could pass an examination in physics and mathematics pective of where they had gained their knowledge, was also The first speaker to take up the cudgels was Mr. Howard, after a graceful little eulogy of the late Professor Hofmann, argued as the object of the Institute was not to provide for persons of ptional genius, who might in any case be trusted to come he top, but to improve the qualifications of the average ssional man, it was useless to substitute a mere examina- l test for a system of training. Dr. Macadam had a com- t to urge similar to that of Dr. Wertheimer. The only ning body in Edinburgh recognised by the Institute was the versity, although other institutions existed which gave identical ula. Professor Frankland strongly endorsed Mr. Howard's view the inadequacy of any examinational test, a position which he tained after an experience of 35 years as an examiner. He thought vidual hardships in the exclusion of some places of education might mended if the matter was brought before the Council, which need e by no hard and fast code. Mr. Hehner, who had not intended eak, said that he thought they were all agreed as to the end to be ned, namely, the raising of the standard of professional qualifica- . It was the means that needed discussion. So far from the nical profession being on a downward path, it was never held in esteem as at present. University training was no panacea, for it the rule in Germany, and neither in affluence nor influence did man chemists compare with English to the latter's disadvantage. t had caused, and would cause, trouble was unprofessional viour, a matter distinct from professional qualification. When it possible for a well-known chemist to advertise that he undertook r analysis at seven and sixpence each, and on being requested to e one for a public body, to arrive on the spot with a Winchester t, collect a sample, and after reporting to charge 50 guineas on the that the balance was for his personal attendance and labour in ling, more need existed for a reform in a moral than a mental tion. Mr. Friswell protested against any action on the part of the ncil which could render it possible for persons without general ing, who had only been taught some particular chemical operation, ose as professional chemists. Professor Smithells wished Dr. theimer to give some *criteria* whereby the fitness of a technical ol might be gauged. He did not think that any stress could be laid he possession, by members of the teaching staff, of an academical ee; in fact, the Council must judge each case individually as it presented to them. Mr. Allen attacked the system now in vogue h enforced a college training for a certain time in all cases. It t result in the absurdity of a man with a sound knowledge of ics and mathematics being told to spend two years in learning their ments. Mr. Cassal insisted on the anomaly of requiring four years to be devoted to the new alternative mixed course of college and practical training as an equivalent to three years of a purely collegiate curriculum. The least that could be done was to put the two methods on a par. He upheld the view that a sound general training was essential, and in order to obtain it, would submit to a certain amount of compromise – although it was a medicine he did not like—and arrange for a joint training in college and in the laboratory of a Fellow. Dr. Wertheimer, replying to the criticisms of Professor Smithells, said that the latter could be answered from his own speech. He had minimised the value of academical diplomas, but it was the power of conferring such qualifications which alone distinguished between a university college and a technical school if both were well equipped. Professor Tilden, in summing up, said that though little of novelty had been brought into discussion, yet the Conference had fulfilled a purpose in showing there existed a general agreement as to the necessity of improving the education rather than the technical qualifications of professional chemists. There was no doubt but that we suffered at present by the presence among us of a number of very imperfectly educated persons. Men of a better stamp were wanted, and no encouragement should be given to the large number of people who having no profession, wanted to get into that of the chemist as being apparently easiest of access. Individual cases of hardship would occur, but considerations of mere pity should not be allowed to impede the advancement of the profession as a whole.

THE POLLUTION OF THE RIBBLE AND ITS TRIBUTARIES.

THE monthly meeting of the Joint Committee appointed to deal with the pollution of the streams in the Ribble watershed was held recently at the County Offices, Preston. Mr. T. Fair presided, in the unavoidable absence of the Right Hon. J. T. Hibbert and there were also present: Messrs. J. Satterthwaite, M. S. Maynard, H. Rawcliffe, J. M. Ferguson, R. T. Assheton, H. T. Parke, W. Smith, T. Lightbown, T. Burrows, and the Rev. R. C. Fletcher; Mr. Naylor, Chief Inspector; Mr. Wilson, deputy clerk.

POLLUTION BY SEWAGE MATTER.

LEGAL PROCEEDINGS AGAINST AUTHORITIES.

The sub-committee appointed to investigate the replies from local authorities relating to the treatment of sewage within their districts, reported as follows:—

Special investigation has been made into the cases of those local authorities which, from their answers, appear to have done least in the direction of sewage treatment, with the following result:—

Of the Boroughs and Urban Sanitary Authorities, seven have either no scheme prepared or do not treat the sewage at all. These authorities are: The Borough of Clitheroe, the local boards of Clayton-le-Moors, Croston, Great Harwood, Padiham, and Hapton, and the Rural Sanitary Authority of the Clitheroe Union. Two also have their districts only partially provideded for, namely, the Rural Sanitary Authorities of the Chorley and Preston Unions.

The sub-committee recommend that all these authorities have notice served on them of the intention of the Joint Committee to take proceedings against them for an offence against part 2 of the Rivers Pollution Prevention Act, 1876.

The authorities which have works in operation, but do not treat the effluent efficiently, are the boroughs of Accrington, Chorley, Darwen, Southport, and Wigan, the local boards of Adlington, Aspull, Billinge, Blackrod, Brierfield, Church, Horwich, Ince-in-Makerfield, Leyland, Ormskirk, Orrell, Pemberton, Skelmersdale, Standish-with-Langtree, Upholland, and the rural sanitary authorities of the Fylde and Ormskirk Unions.

The sub-committee resolved that these authorities be requested to take such steps as may be necessary at the earliest possible date to effectually and efficiently treat their sewage.

The authorities which have schemes in land or works in progress are the boroughs of Burnley, Preston, and Nelson, the local boards of Abram, Birkdale, Fulwood, Oswaldtwistle, Rishton, St. Annes-on-the-Sea, and Walton-le-dale, and the rural sanitary authorities of the Blackburn and Burnley Unions.

The sub-committee resolved that these authorities be requested to complete their works, so as to be in a position to effectually treat their sewage with as little delay as possible.

The sub-committee also resolved that the sewage works of the borough of Blackburn and the position of the local boards of Longridge and Trawden with regard to their sewage be further reported upon by the chief inspector before any action with regard to them is taken in the matter.

The sub-committee beg to state that before making any of the above recommendations they very carefully considered the individual positions of each local authority, and the possibility of such works and means of sewage purification as suggested being effectually carried out.

With reference to liquid pollutions, the sub-committee resolved that the attention of the manufacturers be called to the pollution arising from their works, and to the necessity of their taking effectual measures to prevent the continuance of the same, and thus obviate the necessity of the committee taking proceedings against them under the Act.

The chairman, in moving the adoption of the report, said the sub-committee had gone most carefully through the list of local authorities, and, where there was any doubt, they instructed the inspector to make further inquiries. The sub-committee had come to their conclusions, believing that if action were to be taken it was much better that it should be at once, in order that the various authorities might see that the Joint Committee were really in earnest in the matter they had taken up. In the action they proposed to take they were only following on the lines adopted by the Committee of the Mersey and Irwell watersheds.

After a somewhat lengthy discussion, the following resolution was moved by the Rev. R. C. Fletcher :—"That a letter be addressed to each of the undermentioned authorities requesting them to complete their sewage works so as to be in a position to effectually treat their sewage with as little delay as possible :—The Corporations of Burnley, Preston, and Nelson ; the Local Boards of Abram, Birkdale, Fulwood, Oswaldtwistle, Rishton, St. Anne's-on-the-Sea, and Walton-le-Dale ; and the Rural Sanitary Authorities of the Blackburn and Burnley Unions."

The proposition was agreed to.

A proposal that a general notice be issued to manufacturers and whoever it might concern within the watershed, calling attention to the necessity of taking effectual measures to prevent pollution, was opposed by Mr. Burrows and Mr. Smith, who argued that only offending manufacturers should be notified, and that upon the specific complaint of the inspector.

The matter was ultimately referred to the sub-committee.

THE POLLUTION OF THE DOUGLAS.

Mr. Naylor, the inspector, presented a further report upon the subject of pollution as follows :—

16, Walton's-parade, Preston, May 7th, 1892.

Chairman and Members Ribble Joint Committee,

Gentlemen,—Since the Sub-Committee met for the purpose of drawing up the report just read, I have visited the districts of three authorities concerning which sufficient information was not to hand previously. These are Trawden Urban Sanitary Authority, Longridge Urban Sanitary Authority, and Blackburn County Borough. I should suggest that Trawden and Longridge be placed amongst those upon whom it is recommended that notices be served. All the Trawden raw sewage is emptied from drains directly into Trawden Brook, though the configuration of the land on which the houses are built, as well as the blocking of the houses, are such that an intercepting sewer could be laid at a cost below the average. The rateable value of Trawden is £6,365. ; population, 2,194.

Longridge at present divides its sewage, untreated, among the Hall, Low, Loud, and Daniel Platt Brooks. Though the topographical features of this district are somewhat peculiar, there is nothing to prevent 90 per cent. of the sewage being intercepted at an ordinary figure. The rateable value is £15,573. ; population, 4,290.

From an interview with the borough engineer of Blackburn, I learn that it has been decided to lay down filtering beds and precipitation tanks at Samlesbury, but the plans are not yet prepared. Blackburn may therefore be placed amongst the special cases. The Whalley cinder and refuse tip alluded to at the last meeting I find to consist of domestic refuse and ashes deposited by or according to instructions from individual householders. A similar source of pollution exists at Padiham also, which could only be met by the service of a notice upon each particular case.

The lime has now been carted off the river bed adjoining Colne Gasworks, and the cinders are being removed.

Messrs. Shaw have not yet removed the cinders from beneath their shoot.

My attention has been directed to an accumulation of alkali works' tank waste tipped on the river Douglas bank, and canal embankments at Newburgh, in the Lathom Sanitary Authority's district, which is a public nuisance, and the source of much serious river pollution.

The tip itself is not so objectionable as the drainage therefrom. This is a yellow liquor constantly emitting sulphuretted hydrogen gas, and nothing further, I presume, need be said as to the existence of a public nuisance.

This waste contains about 15 per cent. sulphur when fresh from the lixiviation tanks, but important changes take place when left exposed to the atmosphere. It is now about 20 years since the finishing touch was given to this tip, in the shape of a covering of soil and a crop of grass. Meanwhile most of the sulphides have drained away into the brook, and portions are so continually draining into it, either as sulphides or other soluble sulphur compounds. But in whatever form the sulphur enters, a nuisance is bound to be created, for the Douglas at this point holds in solution an extraordinary amount of carbonic acid due to the decomposition of unpurified sewage, or sewage effluents, from Horwich, Blackrod, Adlington, Ince-in-Makerfield, Standish, Aspull, Pemberton, Billinge, and other centres of population higher up. The drainage also contains sulphydrates and sulphides, as well as hypo-sulphites; and though in small amounts only, in amounts sufficiently large to be far too perceptible. The action of the carbonic acid on sulphydrates and sulphides of lime is to produce sulphuretted hydrogen and carbonate of lime ; on hyposulphites, sulphurous acid is generated and sulphur precipitated. The result is that the river, on nearing the drainage outlets, is turned milky white in its ordinary course, and in the absence of this drainage in dry weather, the diminished volume of the river is blackened by unpurified sewage and manufacturing refuse.

It is, therefore, very desirable that steps be taken to prevent the entrance of this liquor into the river, though it is not sufficiently rich in sulphur to pay for its recovery. Its strength is less than 1 deg. Twaddel, whereas liquors similar in other respects, but of 5 or 6 deg. Twaddel are permitted a second percolation through the heap for concentration, before being used in the Chance Claus process, and then not for recovery directly, but only instead of water for lixiviating fresh tank waste, to go into the carbonators.

There are, nevertheless, means available whereby this drainage can be rendered harmless, and since the pollution may continue many years under present circumstances (a sample of the waste contained 2 per cent. of oxidizable sulphur only 2 ft. from the surface), some means should certainly be adopted.

I am, gentlemen, your obedient servant,

William Naylor.

The Rev. R. C. Fletcher moved, upon the foregoing report, that the clerk report to the chief inspector of alkali works the existence of the alkali tip at Newburgh, near Parbold, and call his attention to the great nuisance arising therefrom ; and that the owners of the land be also asked to cause the abatement of the nuisance. He (Mr. Fletcher) knew the Douglas 30 years ago, when there were a lot of salmon in it, but now it was impossible to catch a conger eel in it ; no fish with the smallest amount of self-respect would live in the Douglas.) (Laughter.) For years this immense bank of alkali has been turning into it.

Mr. Rawcliffe said it was commonly known as "Lord Derby's stink" (Laughter.) It was a disgrace to the place, and although a bad smell it was considered very healthy, and Lord Derby, who had been appealed to, refused to do anything in the matter.

The motion was agreed to.

On the proposition of Mr. Satterthwaite, it was resolved that the clerk write to Messrs. Shaw, of Colne, giving them notice that at the expiration of two months proceedings would be commenced against them unless they removed the cinder tip at present discharging into the middle of the river.

The committee then adjourned.

THE LABOUR COMMISSION.

THE CHEMICAL TRADE.

YESTERDAY the "C" section of the Labour Commission, dealing with the textile and kindred industries, again sat at Westminster under the chairmanship of Mr. Mundella. The first witness was

Patrick Healy, who said he was employed in the soda finishing department of the works of Messrs. Hutchison, chemical manufacturers, Widnes. He had worked in that department for the past four years, having been previously what was called a chemical labourer. In the soda finishing department the work was done by piece. There were no fixed hours of labour, the time of work depending upon the nature and quantity of the work to be done. Ten and a half to twelve and a half hours were usually worked per day. No fixed time for meals was allowed, the men having to get something to eat when they could. The wages varied from £2. to £2. 7s. per week. The sanitary arrangements were very bad, both as regards ventilation and arrangements for decency. Some portions of the work were very deleterious, causing swelling of the stomach and nausea, as well as taking away the appetite. The salt cake and burning departments were the most unhealthy, owing to the inhalation of gases. In the case of salt cake making, if the men were not careful the work destroyed their teeth. The workmen were obliged to wear muzzles, and if they refrained from biting these and also cleaned their teeth regularly the danger was not so great. But he believed that with proper ventilation much of this danger to the teeth would be avoided. The men were accustomed to take stimulants in order to get rid of the effect of the gases, and in many cases they resorted to these stimulants three or four times a day. Whisky or rum was usually the spirit selected. These stimulants were not provided by the employers, but had to be obtained at the expense of the men themselves, generally

the nearest public-house. In some instances this resort to stimu- led men to become intemperate, but, as a rule, he thought the nical workers were a temperate set of men. Witness had never self been actually "knocked over" by the gases, but he had uently had to run away from them. The men were very liable to t diseases and bronchitis. There was a medical man appointed onnection with his works, but he was seldom called in except in of accident. He was paid out of the sick and burial fund, ributed by the men themselves. He would suggest that inspectors the ranks of the men themselves should be appointed for chemical ks, so as to prevent the large emission of gases. He had never seen an ector in the chemical yards. He certainly urged that there should etter inspection, better sanitary arrangements, and better venti- n. In one works—Messrs. Gaskell, Deacon, and Co.'s—the men ked in three shifts of eight hours each. These men received less es, but they were much more comfortable and enjoyed better health consequence of working the shorter hours. Another thing that he to urge was the need for the better fencing of machinery, many dents happened on account of deficiencies in that respect.

atrick Shiel, employed in the salt cake department of Messrs. ride's chemical works, St. Helens said that his employment was t the worst in the whole of the chemical trade so far as injury to th was concerned. He corroborated generally the statements of the ious witness.

hn Carey, who worked in the bleaching powder department of srs. Curtice's works, said that he was not able to work more than r seven hours a day owing to the fumes that came from the ng chambers. The men had to take stimulants to enable them to off the effects of these fumes. They could not remain in the bers more than a few minutes at a time, and had to run into the air every now and then.

THE LATE PROF. HOFMANN.

the death of August Wilhelm von Hofmann, which took place recently, the world has lost one of the most important ists of the generation now passing away, a man who, by his tific work, has largely contributed to the growth of the science hemistry, while at the same time his personality made itself dantly felt in practical affairs. This was especially the case g Hofmann's sojurn in London, where he spent the years from to 1865, holding at the same time the important positions of essor at the newly founded Royal College of Chemistry, and of ty Master of the Mint. During this time some of Hofmann's f researches in pure chemistry were carried out side by side with nore public labours, which included his work at the Mint and the tion of many chemical problems whose importance lay in their ing on practical affairs. One of these, for which, unfortunately, atisfactory answer was found, was in connection with the rapid mposition in the London atmosphere of the Aston dolomite used in ding the Houses of Parliament. A chemical remedy was, indeed, nitted to the Committee appointed by Parliament to inquire into matter, but proved too expensive to be capable of application on so e a scale. Another question in connection with which Hofmann's e was brought into prominence was that of the alleged use of hnine to impart bitterness to ale. In the spring of 1852 a state- t was made by a French Professor in a popular lecture to the effect the addition of strychnine was a common practice among English wers of pale ale, and this report being taken up by the whole glish press caused a very marked falling off in the demand for bitter Messrs. Allsopp and Sons commissioned Hoffman and Graham make a series of exhaustive tests for strychnine in numerous samples ained from London retailers, and their report that no trace of chnine had been found was advertised on a scale almost unparalleled imes when the art of advertising was still young. In his later rs, as professor at Berlin, Hofmann was a less important influence English scientific life, but he never forgot the kindness he had ived in this country when his German laboratory was visited by glish students. His mastery of our language was unusually com- e. Hofmann was still quite near the end a very hard worker, fre- ntly lecturing at eight in the morning after working up to midnight is laboratory the night before, yet his sympathies were very wide, his acquaintance with our literature would have put many of us to me.

THE EIGHT HOURS CONCEDED.—At the Rotherhithe Gasworks, nging to the South Metropolitan Gas Company, where since the strike the men have worked under the eleven hours system, the nager has issued a notice stating that from Monday the eight rs method will be adopted. This step has, it is said, given great sfaction.

THE AMENDMENT OF THE ALKALI ACT.

THE following is the new Bill to amend the Alkali Act of 1881, which is now being promoted in Parliament.

A BILL TO AMEND THE ALKALI, &c, WORKS REGULATION ACT, 1881.

Be it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows :—

1. The works specified in the schedule hereto shall be added to those specified in the schedule to the Alkali, &c., Works Regulation Act, 1881, and shall be scheduled works for the purposes of that Act.

Provided that if the process used in any work specified in Part I. of the schedule hereto shall be such that no sulphuretted hydrogen is evolved therein, the work shall not be deemed to be included in the schedule.

2. Works in which salt is produced by refining rock-salt, other than those where the rock-salt is dissolved at the place of deposit, shall not be within the provisions of the Alkali, &c., Works Regulation Act, 1881, in regard to works in which the extraction of salt from brine is carried on, or of any order made or to be made under section ten of that Act.

3. This Act shall come into operation on the *first day of April in the year one thousand eight hundred and ninety-three*, but certificates of registration may be applied for and issued at any time after the *first day of January* in that year.

4. This Act may be cited as the Alkali, &c., Works Regulation Act, 1892.

SCHEDULE.

PART I.

(1.) Alkali waste works, that is to say, works for the recovery of sulphur from alkali waste or for utilizing the sulphur or any other constituent of such waste.

(2.) Barium works, that is to say, works for the manufacture of barium compounds from barium sulphide.

(3.) Strontium works, that is to say, works for the manufacture of strontium compounds from strontium sulphide.

(4.) Antimony sulphide works, that is to say, works for the manufacture of antimony sulphide.

(5.) Bisulphide of carbon works, that is to say, works for the manufacture of bisulphide of carbon.

PART II.

(6.) Venetian red works, that is to say, works for the manufacture of Venetian red, crocus, or polishing powder, by heating sulphate or some other salt of iron.

(7.) Lead deposit works, that is to say, works where the sulphate of lead deposit from sulphuric acid chambers is smelted.

(8.) Arsenic works, that is to say, works for the preparation of arsenious acid, or where nitric acid or a nitrate is used in the manufacture of arsenic acid or an arseniate.

(9.) Nitrate and chloride of iron works, that is to say, works in which nitric acid or a nitrate is used in the manufacture of nitrate or chloride of iron.

(10.) Muriatic acid works, that is to say, works, not being alkali works as defined in the Alkali, &c., Works Regulation Act, 1881, where muriatic acid is made.

(11.) Fibre separation works, that is to say, works where muriatic acid gas is used for the separation of silk or woollen fibre from vegetable fibre.

(12.) Tar works, that is to say, works where gas tar is distilled or is heated in any manufacturing process.

(13.) Zinc works, or works in which zinc is extracted from the ore.

FILTRATION OF OILS AND VARNISHES.

THERE have been frequent attempts to abolish the old, costly, and ineffectual method of filtering turbid oils and varnishes through bags by substituting filter-presses. But though the filtration in a press under pressure is satisfactory enough at the beginning, it has been invariably found that after a short time the pores of the filter-cloth get clogged, and no more liquid will pass even under increased pressure. In fact, the pressure is positively detrimental, for it drives the finely-suspended impurities into the pores of the cloth, and thus prevents the passage of the clear liquor.

In order to secure a slow but continuous filtration of either oils or varnishes, it is essential that the material containing the impurities should be allowed to come in contact with the filter-cloth in an entirely

unagitated state, so that the material may diffuse through the pores of the cloth; and in this way only can the finely-suspended impurities be held back on the surface of the cloth without entering the pores. This is no doubt achieved to a certain degree by the old method of filtration through bags, but one great drawback to this method is the comparatively small filtering surface afforded in a filter bag. Another great difficulty in the filtration of varnishes is to prevent the filter-cloth from getting hard, stiff, and unfit for filtration, in consequence of the outside of bags or one side of the cloth in filter-presses being in contact with the air.

In order to overcome these disadvantages, Mr. A. L. G. Dehne has constructed the Patent "Excelsior" Filter, which is, we understand, being largely introduced in oil and varnish works.

It will be seen from the illustration that this patent filter is constructed upon the principle of a filter-press. It consists of a great number of narrow filter chambers. The filter-cloth is hung over frames, which have several vertical supports for the cloths. The material enters from a higher tank simultaneously into all the chambers at the top, and after filling them the bright liquids in the adjoining compartment find their exit in a united channel also from the top, so that a very slight uniform pressure, from the liquid flowing into the filter from a higher level, is attained. By means of this arrangement the filter-cloth is constantly surrounded on both sides and over the whole of its surface by the material, so that as long as the filter is kept in operation the cloth cannot stiffen. Where the filtration is interrupted for some time, the cloth may easily be taken out, as they are in no way fixed, and put into a barrel of turpentine, Of course the turpentine is not spoiled for varnish manufacture by the small amount of varnish it dissolves. The filter does not require any attention, and may be kept in operation day and night. Further particulars and prices may be obtained from Mr. C. Harzer, Billiter-buildings, Billiter-street, London, who is the representative of the above-named firm. The filter should find favour amongst oil refiners and varnish makers, as it combines a maximum filtering surface with a minimum amount of floor space, and, not requiring to be under great pressure, is much cheaper than a filter-press.

AN IMPORTANT DECISION UNDER THE EMPLOYERS' LIABILITY ACT.

AT the Marylebone County Court, recently, Judge Stonor delivered a considered judgment in the case of "Bradley *v.* Gas Light and Coke Company, which was heard at the March Court. On August 6th last the plaintiff was in the employment of the defendant company, working in the erection of certain machinery in a building called the retort-house in their works at Kensal-green. He was engaged in "pinning up" with brick a heavy retort or round iron casting, which was held in position temporarily by a wooden strut, part of the plant of the defendant company. This strut was displaced by some bricks falling upon it, and, in consequence, the retort fell on the plaintiff, inflicting serious injuries, in respect of which the action was brought. The plaintiff asserted that the accident happened through the strut being placed against the opposite round iron retort instead of against a flat piece of wood as the other struts were fixed. The defendants denied this, and denied also that the accident was occasioned in this way. They further alleged that the accident would have equally happened whether the strut were placed against the iron or the timber. At the conclusion of the plaintiff's case it was submitted, on behalf of the defendants, that he ought to be nonsuited, on the ground that the machinery in question was incomplete and not then "connected with or used in the business" of the defendant company within section 1, subsection 1, of the Employers' Liability Act. His Honour declined to stop the case, and it was arranged that the questions of fact as to the defect in the condition of the machinery and the damages should be left to the jury, and that the question of nonsuit should be reserved. The jury found the questions left to them in favour of the plaintiff, and assessed the damages at £150. Upon the question of nonsuit the defendants' counsel relied upon the decision and *dicta* of the Judges of the Divisional Court in the case of "Howe *v* Finch" (L.R. 17, Q.B.D., 187), where the defendants were constructing an external wall of a building intended to be used as a warehouse, but which h been used at the time when the accident occurred through t falling upon the plaintiff. The Court held that the facts did n "a defect in the condition of the works connected with or used business" of the defendants within the subsection in question, a Justice Mathew said "he did not think that it was intended t to a case where machinery was brought into a place, intende used, and left so insecure that it fell," a *dictum* which very meets the present case, but appears to have been unnecessary decision of the case then before the Court. Mr. Justice Mathe cludes his judgment with the observation that "the damage by of a wall in course of erection cannot be spoken of as arisin defective works actually occupied or actually used for the pur business," as to which Judge Stonor observed that the Act d require that works should be actually occupied or actually us only that they should be "connected" with the business defendants. Mr. Justice A. L. Smith gave judgment to th effect, concluding as follows:—(p. 190) "'Ways' means the wa in the business, not partly made ways not used. If that be s 'ways' it is as to 'works.' I do not agree that if a whole st fell or caused damage to a workman he would not have a r action, for I think that he would. But here it was partly finish think 'ways, works,' &c, mean the existing and completed w His Honour said he could not in the present case come to th clusion, although some of these *dicta* certainly appeared to But he thought this case might be distinguished from the c "Howe *v.* Finch." The circumstances under which the plai the latter case was injured scarcely appear in the report and ma been very material to the decision arrived at apart from the const of the Act. It does not appear in the report whether the defe were building themselves or engaged contractors or builders f purpose, nor whether the building was upon the same prem those on which the defendants actually carried on business o other premises, nor whether the plaintiff was engaged in the defe business and necessarily passing the wall in question at the time accident. This rendered comparison of that case with the difficult and unsatisfactory. It was, however, clear that the "Howe *v.* Finch" was part of a building, which not only h been used, but might never have been used for the purposes defendants' business, whilst in the present case the machine plaintiff was employed in erecting was intended as an addi machinery actually in use, and was not only intended for the ants' business, but could not be otherwise employed. His H could not see how it could be said that such machinery w "connected with" the defendants' business. The question completion or use of this machinery appeared to him to have n to do with its "connection" with the defendants' business. these circumstances he considered that the plaintiff had made case to go to the jury, and that he was entitled to judgment un subsections of 1 and 2 of section 1 of the Act. His Honou cluded:—"Since preparing this judgment I have seen the c 'Brannigan *v.* Robinson' (1892, 1 Q.B., 344), in which Mr. Wright, referring to the case of 'Howe *v.* Finch,' seems to h the same difficulty as to the facts of the case which I have, and I assumed that the building in that case was erected by a builder a by the defendants themselves, and was in the possession of the at the time of the accident, and this, perhaps, was the true gro that decision. If so it presents an additional marked disti between the case of 'Howe *v.* Finch' and the present."

MANCHESTER SHIP CANAL AND THE CHESH SALT TRADE.

ONE of the largest vessels ever loaded in the Weaver Pool—t the Dundonald, of Glasgow—sailed recently with a of salt for the west coast of Scotland, *via* Eastham Locks prompt and successful loading and departure of the vessel is re as the commencement of a new order of things of the greatest i ance to this branch of industry. The vessel under the old con could not have been loaded and cleared at Weston Point (owing neap tides which are now on) earlier than the 24th inst., which have meant a delay of 16 days. The Weaver Pool promises become a very busy port on the canal. Another steamer, the is also to be loaded, and a number of sailing vesse always to be seen there. The facilities both for the dischargi storing of timber have already been pointed out. There is course of construction a jetty 700ft. long, capable of accomm six large vessels. The stage on the Frodsham Marsh is com and the first row of piles for the "island jetty" have been driven provision of further accommodation is in immediate contem The water area is at this point so ample that none of these wor interfere with the moving traffic in any way.

Parliamentary Jottings.

THE REVENUE AND GAS PRODUCTS STILLS.

n the House of Commons on Tuesday, Sir Henry Roscoe asked the ncellor of the Exchequer whether he was aware that several prose- ons had been conducted by the Inland Revenue against Gas Com- es (especially that of Sunderland) and against certain chemical nufacturers of the products of coal gas for infringing an Act passed 846 (9 and 10 Vic. c. 90) making it compulsory for every person ing a "still" to take out a licence for the same and pay a duty of per annum, and in default a penalty not exceeding £50; whether for the manufacture of gas products had been in use for upwards irty years without any attempt to tax them; whether such stills e under the Revenue Act for the prevention of the manufacture of ts by unlicensed persons; and whether, if the Inland Revenue ed to tax a piece of apparatus which was not used for distilling t, he would direct the preparation of an Act of Parliament for the ial purpose instead of permitting an old Act to be used in such .

he Chancellor of the Exchequer said there had been a prosecution nst the Sunderland Gas Company at the instance of the Commis- rs of Inland Revenue for the recovery of £50 penalty imposed by of Parliament for keeping a still without a licence. The prosecu- was heard on the 6th inst., and dismissed, and a special case was stated for the opinion of the Queen's Bench Division as to whether till used by the Company was a still for the keeping of which a ce was required under the Act. In the opinion of the Board of d Revenue these stills were capable of being used for the produc- of spirit. But as the matter was still *sub judice* he would not ss any opinion on it.

SMOKELESS POWDER.

answer to questions from Mr. Baumann,

r. Brodrick said,—Cordite is the only smokeless powder the patent hich has been assigned to the Secretary of State, and no other of smokeless powder is in course of manufacture in the Govern- factories. It will be necessary to give trade firms licence to manu- re cordite under the patent, and it is not considered necessary to the specification any longer secret. It is not known at the War e in what foreign countries the inventors have patented cordite, no arrangement has been made with them as to the profit under gn patents. The Explosive Committee was appointed on July 10, , and was dissolved on July 10, 1891. The reference to the com- e was the consideration of questions relating to new explosive s or to new applications of or improvements in explosive agents dy known, if such questions were referred to the committee by r of the Commander-in-Chief.

PETROLEUM TRAFFIC IN THE SUEZ CANAL.

the House of Commons recently, Mr. Craig asked for the names e experts whose assistance was given by the Government to the sh directors of the Suez Canal Company when the regulations for ransport of petroleum were considered, and whether the experts ainted themselves by personal observation with the exceptional litions under which the traffic, if permitted, must be conducted.

r. J. W. Lowther.—The inter-departmental committee which con- red the regulations referred to was composed of Colonel Majendie resenting the Home Office), Sir Digby Murray (representing the rd of Trade), Captain Wharton (representing the Admiralty), Sir rs Wilson and Sir J. Stokes (two of the British directors of the t Canal Company), and myself (representing the Foreign Office). names of the first three gentlemen are, I think, a sufficient antee of the quality of the assistance given to the British directors. hon. member is labouring under a misapprehension if he thinks any power is vested in her Majesty's Government to permit or id any particular class of traffic through the Suez Canal. Her esty's Government have no such power, nor has any one except company.

n answer to Mr. Randell,

Ir. J. W. Lowther said,—The Suez Canal Company have sanctioned visional regulations for the passage of petroleum tank ships on and July 1 next. A copy of the report of Sir Frederick Abel and Mr. erton Redwood has only been received to-day, and will be forwarded he British directors of the Suez Canal Company. Her Majesty's ernment have no power to interfere with the company in regard to regulation of the traffic passing through the canal so long as the pany complies with the provision of its charter—that the flags of all ons shall receive equal treatment. There is no objection to lay the ers asked for, but I desire to point out that the regulations referred appeared in the *Board of Trade Journal* for February, and the respondence with the shipping associations, chambers of commerce, l others has already been made public.

Mr. Brunner asked the Secretary of State for War whether he had considered the provisional regulations of the Suez Canal Company for the carriage of petroleum in bulk as they affected the safety of the thousands of her Majesty's troops annually passing through the canal.

Lord G. Hamilton.—The question of the carriage of petroleum in bulk through the Suez Canal was considered by an Inter-Departmental Committee at the Foreign Office in December last, and additions to the proposed regulations were framed with the object of making the traffic as safe as possible. These proposals were submitted by the British directors to the Suez Canal Company, and have been in part included in the revised regulations. I am, however, informed that at present petroleum is not carried in bulk through the canal.

Selected Correspondence.

CANADIAN APPLES AND ARSENIC.

To the Editor of the Times.

SIR,—In your issue of the 12th ult.—a copy of which has just reached me—you publish a letter from Mr. Morgan, editor of the *Horticultural Times*, in which that gentleman takes exception to certain statements contained in a quotation in my report on the absence of arsenic in Canadian apples. I shall be glad if you will grant me space for a brief reply. It seems rather unfortunate that the term American should be popularly restricted to matters and things pertaining and belonging to the United States, for, taken in its correct sense, it can never exclude matters and things Canadian, and there must always remain a doubt in the mind of the reader whether the word is being used popularly or correctly. The publication of my report has shown that Mr. Morgan, when speaking of "American" apples, referred solely to those from the United States, for he now says that he never alleged that Canadian apples are poisonous, but that all his remarks and criticisms had been directed against apples coming from the United States. While acknowledging with pleasure this admission, I must remark that I fail to find the reason why our fruit should be free from arsenic while that from the United States is poisonous, since the solution used in spraying for the codling moth, its amount, and the times of application are identical in the two countries.

In the first place, it would be interesting to learn if there is chemical proof to support the statement of the "American Importer" that the apple absorbed the poison through the skin after being sprayed for codling moth according to the prescribed method.

Secondly, Mr. Morgan says, "Why does he withhold the fact that lime is used in the solution to make the arsenic adhere to the fruit?" Lime is not used in the spraying solution, which, as universally applied, is 1lb. of Paris green (not arsenic) in 200 gallons of water.

It is further submitted by Mr. Morgan "that if the arsenic is used in such infinitesimal proportions it would produce no effect on the insect." In reply to this statement, I would say that there is abundance of evidence that spraying at the proper time with the solution above referred to has very materially lessened the number of apples attacked by this insect. The undoubted efficacy of this method for preserving the apples from the ravages of the codling moth is attested by all horticulturists and pomologists of the experimental stations of the Continent. In addition it must be stated that, although such sprayed apples have been repeatedly analysed, not a trace of arsenic has yet been detected in them.

Mr. Morgan also says "that if the subsequent rains (provided there are any) effectually wash off all traces of the arsenic used, how was it that the fruit seized by the New York Board of Health this season was destroyed on the testimony of official analysts as being of such a poisonous nature as to be dangerous to eat as food?"

I would assure your readers that in Canada we have rains subsequent to the spraying, and that our climate is not one that subjects us to a continuous drought from May to October.

The fruit seized by the New York Board of Health was grapes that had been over-zealously sprayed with a solution of copper (containing no arsenic) by certain grape-growers in the Hudson River Valley. These grapes had been very heavily sprayed long after the time when it was necessary and customary to continue the application. As a result, an amount of copper remained on the fruit visible to the eye, but no arsenic was detected, as none was applied.

In conclusion, I would emphasize the fact that the poisonous or non-poisonous character of sprayed apples must be decided by chemical analysis, and, further, that by this test such apples have been declared free from arsenic.

I have the honour to be, Sir, your obedient servant,

FRANK T. SHUTT, Chemist,
Dominion Experimental Farms.

Correspondence.

*** We do not hold ourselves responsible for the opinions expressed by our correspondents.*

ANSWERS TO CORRESPONDENTS.

F. R. and Co.—There has been an advance from the figure you quote since the date of our last report. But we know ourselves of sales effected at 7¼d., so that we should call 7⅜d. full value, it being stated upon the best authority that it *offers* freely at 7½d., though no doubt considerable sales would be effected at that price.

L. and S. (St. Louis).—We shall have much pleasure in making use of your proposal.

C. H.—This week. The changes have been seen to as you will no doubt, observe.

C. Co., Ltd.—Thanks for sketches. We have the matter under consideration and will communicate with you shortly.

V. and S.—The matter has been attended to.

P. A. M. Co.—We think your idea is suitable and have made arrangements to fall in with the same.

Sulphate.—It is still on the *tapis*; there is further information in this issue.

NOTICE.

LONDON AGENTS.

Booksellers and Newsagents may now obtain supplies of
THE CHEMICAL TRADE JOURNAL
From
MR. JOHN HEYWOOD,
2, Amen Corner,
Paternoster Row, E.C.,
On usual trade terms.

Trade Notes.

Obituary.—Major-General Noble, Royal Artillery superintendent of the Royal Gunpowder Factory, died at Thrift Hall, Waltham Abbey, last Tuesday. The deceased, who had a distinguished career, was the inventor of several kinds of gunpowder, and the discovery of the cordite now being manufactured was largely due to his experiments.

Fire at Clayton Chemical Works.—Early on Wednesday morning a fire broke out at the Hope Chemical Works, Crab Tree Lane, Clayton. Owing to the speedy efforts of the workmen employed on the premises, however, the fire was soon subdued, there being no need for the services of the fire brigade, who were soon on the spot.

New Anti-Pyrine Compound.—A patent compound of anti-pyrine and iodine has been prepared in Germany by the well-known firm of Meister, Lucius and Brüning, which is made by adding potassium carbonate and iodine alternately in small quantities to an aqueous solution of anti-pyrine. The product is insoluble in water, and after recrystallizing from alcohol melts at from 158—160°C.

The Output of Nitrate.—A recent telegram from Valparaiso states that the nitrate combination in London has issued notice to its managers to limit the output of nitrate to 17,000,000 quintals (quintal, 123·2lbs.) on account of the lowness of the prevailing price. This is a further reduction of 1,000,000 quintals from the limit fixed in August of last year, which limit was fixed shortly after the signing of the "Escritura."

Treating Soap Lyes.—A new method of treating soap-makers' lyes has recently been patented. It consists of adding to the waste lyes, while boiling bisulphate of soda; to neutralize them, and then adding sufficient alkali or sodium sulphate to saturate the solution. The liquid is then allowed to cool and the sulphate of soda to crystalize out. The mother liquid containing salt and glycerine is drawn off and concentrated as required.

A Cleaning Compound.—The following compound has been suggested as washing jelly, it being the subject of a recent patent. It certainly contains several ingredients which are commonly resorted to for cleaning purposes, being composed as follows:—¼ lb. soap, 1 lb. water, to this when boiling is added 1 oz. oil of turpentine, and when nearly cold, before the mixture sets however, 1 oz. of strong liquid ammonia is finally well mixed in.

Electrolytic Chlorine.—A recent patent for the production of chlorine by electrolising a metallic chloride, consists in heating salt or the double chloride of sodium and aluminium in a vessel heated by a stove and covered by a hood; the chlorine evolved is carried over by the hood into receivers containing lime or proto-chloride of iron. Carbon electrodes are used in the decomposing vessel, the current being carried by wires through the cover.

Society of Chemical Industry: *Manchester Sectio* last meeting of this section will be held on Tuesday, 24th 1892, at the Victoria Hotel, when several short papers will including:—"Researches on formation of pigment lakes" (2r and on "Oil and iron stains in cotton cloth," by C. O. "Estimation of starch and Turkey red oil" (2nd part), b Wilson. Further notes on "Nitrogen in coal gas," by G. F "Sulphuric acid in snow from chemical works," by W. Wil "Notes on various oils" (2nd part), by J. C. Bell, F.I.C.

Advertising up to Date.—Judicious advertising is the e success. To use the most suitable and far-reaching mediu object of all who have need to advertise. The medium offere "Hulme" Patent Advertising Match Co., is of the cosm order, since there is scarcely a corner of the civilised glob matches are not sought after and enquired for as a saleable co Eighty million matches are made daily in London alone. It is therefore, that the use of matches as an advertising medium, ingenious idea, simple, convenient, and far-reaching, suitable purposes, and one, which, next to the *Chemical Trade Journ* best extant for our *clientèle*.

A Serious Conflagration.—A destructive fire broke Bristol on Saturday last in the oil warehouses of Mr. Barnett at the Albion and Phœnix Wharves, alongside the Floating Five thousand barrels of oil were stored on the premises, and an hour all these were involved in the conflagration. For a q an hour dense clouds of smoke obscured everything as the r floors and walls fell in upon the burning mass, and then th spread to the adjoining buildings, quickly clearing the yard o Leonard and Boult, and reaching a rank of dwelling-hous which the inmates fled. The oil which, when released from t poured down in a stream of flame and for hours flooded the s the harbour water with fire, destroyed four barges and a dredger, and also damaged a steamer. The total loss by da wharves and stock and to several other buildings will probabl £50,000. It is understood that Mr. Harris's loss is to a con extent covered by insurance.

The Cubical Expansion of Glass.—A correspondent has written us, asking for an explanation of the statement made Wright, at a recent meeting of the London section of the S Chemical Industry, in answer to which we beg to state that a account, in an easily accessible book, will be found in Ganot's under the head of expansion of liquids, which is dealt with at p in the edition which lies before us. Confusion often arises from that the alteration in the internal volume of the glass vesse strictly corrected by allowing for the cubical expansion of th The method of illustration used, if we remember rightly, by Dr. in the course of the discussion to which our correspondent ref based on the conception of the walls of the specific gravit representing the outer layer of a solid mass of glass of the sam as the bottle. With this idea before us, it is easy to see that w mass of glass expands, it will assume a definite and increased precisely equal to that which would be attained by the out itself, if that alone were expanding, it being premised that th mass of glass is free to expand and that no internal strains are (cf. G. Daniell's Principles of Physics, p. 349). Viewed in this with or without the assistance of text books such as we have the matter does not appear to us to present anything difficult prehension. Ed. *C. T. J.*

Market Reports.

THE LIVERPOOL MINERAL MARKET

The firmness reported in our market last week has co Manganese: Arrivals practically nil; prices steady. Be 6¼d. per lb.; sulphate, £21. 10s.; oxalate, 1s. 6d. chloride, £15.; carbonate, £12. 10s., steady. Magnesite lump continues flat. Raw ground £6. 10s., and calcined £ Bauxite (Irish Hill brand) continues steady; lump 20s. secon and thirds 12s. French chalk: Arrivals this week are smaller continue firm, especially for "Angel White" brand and "S 90s. to 92s. 6d.; prime quality, 90s. to 95s.; and superfi Barytes: Carbonate still scarce, especially best lump, at 90s. nuts, 70s. to 80s.; whilst finest white sulphate is steady. White," No. 1, 70s.; No. 2, 60s. to 65s.; No. 3, 45s. Pumi steady. Iron ore steady; Bilbao shipments unaltered; Iri Cumberland easy. Santander and manganiferous, there is mor Emerystone continues steady, especially for best qualities. No. £5. 10s. to £6.; smalls, £5. to £5. 10s. Fullers' earth qui lump, 55s.; fine impalpable ground, £7.; "Emerald" grou Scheelite, wolfram, tungstate of soda, and tungsten metal

red. Chrome ore firmer, more business doing, especially for higher . Antimony ore and metal has improved. Asbestos very firm. s' lead ore, smalls, £10. 10s. to £11. 10s. Calamine easy. ia sulphate (celestine) quiet. Limespar unchanged, especially for h manufactured; old G.G.B. brand in demand at 50s. (ground). r quiet. Fluorspar: Best quality scarce. Ferro-manganese , 75%, £12.; 85%, £13. 15s. Plumbago brisk. Spanish, £5.; eylon lump at last quotations; Italian and Bohemian, £4. to £12. n. "Founders," £5. to £6.; Blackwell's "Mineraline," £10. n sand, 20s. to 22s. 6d. Ground mica, £45. to £50. China clay ; common, 18s. 6d.; good medium, 22s. 6d. to 25s.; best, 30s. (at Runcorn). Bog ore (oxide of iron) steady; finest quality 23s.

LIVERPOOL OIL AND COLOUR MARKET.

LIVERPOOL, WEDNESDAY.

S.—Palm oil: Lagos continues at £21., at which it is quietly . There has also been a good business doing in Bonny at £20. enin at £19. 15s., both transit. Olive is just about the same as eek. Further sales of Candia have been made during the week 4. Linseed: The improvement of last week continues, being y held for 19s. 6d. to 20s. per cwt. in export casks. Rape: d Stettin varies between 20s. and 31s. Cottonseed: Liverpool has been quoted 19s. 9d. during the week, but is now slightly at 19s. 6d. American continues in fair demand at 20s. per cwt. oil: Owing to large arrivals good seconds Calcutta is flat at to 2½d. First pressure French continues steady at 2 1/16d. per allow is steady, North American doing business at 24s. 6d. to The chances of advance in South American chronicled last week been realised, being now quoted at 27s. per cwt. Resin, common, ne fairly well at 4s. 3d.; it has, however, declined to-day to at which price recent arrivals are being offered. Spirits of tine remain steady at 25s. per cwt., with a moderate demand. eum is steady but quiet, with American at 5¼d. to 6¼d. according lity, and Russian refined at 4½d. per gallon.

LOURS without change. Ochres: Oxfordshire, common, £10. m, £12., best, £15.; Derbyshire, common, 40s., medium, best, 60s. Welsh, best, 70s., seconds, 50s., and common, Irish, Devonshire, 40s. to 45s.; French, J.C., 55s. to 60s.; 65s. to 67s. 6d. Umber: Turkish quiet. Devonshire, 50s. to White lead, red lead, and oxide of zinc unchanged. Venetian 6. 10s. to £10. Cobalt: Prepared oxide, 10s. 6d.; black, .; blue, 6s. 6d. Zaffres: No. 1, 3s. 6d.; No. 2, 2s. 6d. of iron: common, £6.; medium, £10.; finest, £20.

TAR AND AMMONIA PRODUCTS.

zol continues weak and operators seem to have lost all confidence article. Quotations are about 1s. 6d. to 1s. 7d. for 90%, and 1s. 3½d. for 50%. Anthracene shows no life yet. Small ctions, however, are continually taking place, though at ruinous , namely, about 11d. for 30% A and about 8d. for 30% B. cting pitch the reports from the two sides of the country are very ting, but it is evident that the product of next season is not likely so excessive as to upset prices. Some makers of pitch are expect- e price to recede, while others are as confident that the article e dearer before the end of the year.

sulphate of ammonia market is also in a very anomalous state. business is passing locally and on the West Coast, Liverpool is exceptionally favoured, probably on account of the easy shipment erica and the Mediterranean. Quite a different state of things on the East Coast, where sulphate at the present moment almost begging. The East Coast supplies the Northern Continental ts where buyers seem to be of one accord in refusing to purchase esent delivery. Hull price to-day is £9. 17s. 6d., Leith s. 3d, while £10. has readily been obtainable at Liverpool. n price is still £10. and the same figure may be quoted for out- ondon makes.

MISCELLANEOUS CHEMICAL MARKET.

le generally has shown a slight improvement during the past but things all round continue very quiet. There are no special s to report, prices being about the same as last week. Bleaching r keeps firm at £7. 10s., rails. Caustic soda moves freely. sh in good request. We quote 48% Caustic £5. 3s. 9d. Carb. ., rails, makers' works. 58% almost unobtainable for prompt. rystals rather weaker. Salt-cake easier, and there is more g. Chlorate of potash scarce for prompt at 7d. In soda, makers are sold until August. For that delivery 8d. per lb. is quoted. Acetates of lead dull. English, £27. 10s., makers' works. Foreign is declining, £25. 10s. c.i.f. may be taken as its full value to-day. Brown, £17. c.i.f. Acetates of lime have slightly improved and prices are somewhat firmer. Acetate of soda quiet. We quote spot £17. Sulphate of copper, £15. 10s. f.o.b. Sulphocyanides almost unsale- able. Barium, 5d. Ammonium, 7¼d. Bichromates moving fairly well at advanced prices. Chromic acid, 7d. per lb. Carbolic acid extremely flat, and the outlook is most depressing. Potashes, caustic, and carbonate move off briskly, and prices are, if anything, rather firmer. Oxalic acid unchanged.

REPORT ON MANURE MATERIAL.

During the week considerable business has been done in mineral phosphates for shipment, and in nitrate of soda on spot, but in other articles there has not been much passing.

For 75/80% Florida phosphate rock for shipment 9d. per unit c.i.f. to U.K. is now required, and it is understood that close upon this has been paid. There are many buyers at 8½d. There has also been improvement in hot-air dried Peace River and South Carolina rocks, 7½d. having been paid for the former and 7¼d. being probably now nearest value of the latter. Prices of other high grade phosphates almost preclude the shipment of Canadian to Europe, but it is under- stood that some business has been done. There is nothing special to notice in Continental phosphates.

The market for River Plate bones is very lifeless, and we do not hear of any further business. For cargoes for summer shipment to U.K. or Continent the value is about £4. 2s. 6d. No business in crushed East Indian bones is reported; nominal value of Kurrachees is £4. to £4. 2s. 6d. for shipment. There have been considerable sales of Bombay bone meal, arrived at Liverpool, at £4. per ton ex quay for good quality; £4. 7s. 6d. required for very fine quality ex store.

Deliveries of nitrate of soda continue heavy, but the tendency of prices is, notwithstanding, to decline. Closing value on spot is now 8s. 3d. per cwt. for ordinary quality, and 8s. 6d. for refined, due cargoes, and cargoes arrived at port of call are neglected and are scarcely worth over 8s. Later arrivals may be had at even less money. A cargo of Liebig's Guano has been sold for the continent at about 8s. 3d. and 10d. per unit of ammonia and phosphates respectively. Dried blood is in very small supply, and fine home prepared is selling at 9s. 6d. per unit free rails at works for immediate delivery. For later delivery considerably less would have to be accepted to effect sales. Nearest value of River Plate to arrive is probably 8s. 6d. to 8s. 9d. per unit. Kainit is less enquired for, and there are sellers at 45s. in bags, nett cash, free rails Garston or Liverpool. Superphosphates are un- changed, quotation for 26% being 45s. per ton, nett cash, in bulk, free rails.

THE METAL MARKETS.

LONDON, WEDNESDAY.—Pig iron firm; Scotch warrants closed at 40s. 6d. cash. Middlesbrough 37s. 8½d. cash, and Hematite 47s. 9d. cash. Copper, dearer. Chili bars, G.O.B.'s and G.M.B.'s closed at £47. cash, and £47. 7s. 6d. to £47. 10s. three months. Tin firm: Straits closed at £95. 15s. to £96. cash, and £95. 7s. 6d. to £95. 10s. three months. Australian, £95. 15s. cash; English ingots, £98. to £98. 10s. Lead quiet: Spanish, £10. to £10. 11s. 3d. English, £10. 15s. Silesian spelter, ordinary, £22. 10s. to £22. 12s. 6d. Quicksilver, first hands, £6. 15s. second hands. £6. 14s. 6d. Copper shares firm: Cape, 1⅜ to 1½; Copiapo, 2⅜ to 2½; Libiola, 2¾ to 3; Mason and Barry, 4⅜ to 4½; Rio Tinto, 16⅞ to 17; Tharsis, 4⅜ to 4¾; Namaqua, 1⅛ to 1¼; Panulcillo 7/16 to 9/16.

WOLVERHAMPTON, WEDNESDAY.—Improvement is beginning to appear here, induced by the continued strike in Durham and the shortness of iron stocks in consumers' hands. Specifications are reach- ing some of the finished iron works more freely, and pig iron orders are increasing. Prices have a tendency to stiffen, and no one will sell far forward. Native pigs are 36s. 6d. to 37s. 6d. for common, 44s. to 45s. medium, and 62s. 6d. best. Derbyshire pigs 44s. to 45s. delivered, and Lincolns 47s. 6d. to 48s. at stations. Manufactured iron firmer but unaltered.

GLASGOW, WEDNESDAY.—Market quiet, with small business. Scotch done at 40s. 7d. cash, also at 40s. 9d., 40s. 7d., and 40s. 8½d. one month; closing buyers at 40s. 6d. cash, sellers ask 1d. more. Middlesbrough done at 39s. 1½d. and 39s. 0½d. and 39s. 1½d. cash, also at 39s. 1d. one month,; closing with buyers at 39s. 1½d. cash, sellers ask 39s. 2d. Hematite done at 49s. and 48s. 10½d. cash; closing buyers at 48s. 10½d. cash, sellers ask 1d. more. Market will be closed on Tuesday in honour of the Queen's birthday.

TYNE CHEMICAL REPORT.

TUESDAY.

Market for chemicals steady; Bleaching powder continues scarce. Caustic soda in rather better demand. Soda crystals are now quoted at £2. 17s. 6d. per ton, gross weight, f.o.b. without discount. Bleaching powder, softs, £7. 11s. 3d. and £7. 12s. 6d. per ton, hards, £7. 17s. 6d. per ton; caustic soda, 76/77%, £11. 15s. per ton, 70%, £10. 10s. per ton; recovered sulphur, 2 cwt. bags, £5. 5s. per ton; soda ash, 48%, £5. 8s. 9d. per ton, 52%, £5. 17s. 9d. per ton, 56%, £6. 6s. 9d. per ton; alkali, 36%, £4. 18s. 6d. per ton; white alkali, 48%, £6. 10s. per ton, 50% £6. 15s. 6d. per ton, 52%, £7. per ton; hyposulphite of soda, £7. per ton in 5-7 cwt. casks, £7. 15s. per ton in 1 cwt. kegs, both in 10 ton lots; silicate of soda, 75° Tw. £3. per ton, 100° Tw. £4. per ton, 140° Tw. £4. 7s. 6d. per ton; soda crystals, in casks, £2. 17s. 6d. per ton gross weight, in 2 cwt. bags, £2. 17s. 6d. per ton nett weight; chlorate of potash, 7d. per lb. less 6%; pearl hardening, £3. 10s. per ton; pure white sulphate of alumina, £4. 10s. per ton; blanc fixe, £7. 10s. per ton; chloride of barium, £7. 10s. per ton; nitrate of baryta crystals, £19. per ton; nitrate of baryta, ground, £19. 10s. per ton; sulphide of barium, £7. per ton; carbonate of alumina, £28. 10s. per ton; aluminate of soda, £33. 10s. per ton; hydrate of barium, £11. per ton.

South Durham salt firm at 10s. per ton nett, f.o.b. Tees.

Coals: The trade is slightly easier, there being a more plentiful supply for all purposes, consumers only buying from hand to mouth in view of an early settlement of the strike. Best Northumberland steam from 11s. 6d. to 12s. per ton. Small steam from 8s to 9s. per ton, f.o.b. Tyne.

Durham strike: A settlement has not yet been effected, the Federation Board on behalf of the men offering to return to work at a reduction of 7½%. This was refused by the coalowners, who decline to re-open the pits unless the miners agree to a reduction in wages of 13½%. A ballot is being taken this week upon the present situation.

WEST OF SCOTLAND CHEMICALS.

GLASGOW, TUESDAY.

Affecting the manufacture of chemicals in this quarter one rather important event is the new convention for the raising of the values of bichromates, which have been unremunerative for a few years. The new convention, which was consummated the other day in London, is far stronger than was the old one (abandoned three years ago), inasmuch as it includes the German makers as well as the Scotch. The increase, as will be seen in the figures below, is a very substantial one, and quite alters matters for producer and consumer alike. Whether this ambitious compact will prove seaworthy remains to be seen. The late general slackness abides, and the time seems not the most opportune. Bleaching powder may be a little firmer, but crystals are lower, and the other alkalies stationary.

In paraffins there is no improvement, and no change except in lubricating oils, which are duller, without positive drop in price. The Mineral Oil Company, referred to last week, has since issued its report, showing a loss as foreshadowed. Another followed in a day or two, likewise showing heavy loss, and a third calls up the remaining 10s. of capital subscribed. So far, only one has announced ability to pay anything.

Sulphate of ammonia is weaker, and probably has been done at £10., but not certain. £10. 2s. 6d. is not procurable to-day.

Chief prices current are:—Soda crystals, £2. 19s. 6d., nett Tyne; alum in lump, £5. 10s., nett Glasgow; soda ash, 1⅜d., less 2½%, Tyne; caustic soda, white, 74°, £11. 10s., 70/72°, £10. 10s., 60/62°, £9. 7s. 6d., and cream, 60/62°, £9. 2s. 6d., all nett Liverpool; bicarbonate of soda, 5 cwt. casks, £6. 15s., and 1 cwt. casks, £7. nett Liverpool; refined alkali, 1⅝d., less 2½% Tyne; bleaching powder, £7. 10s. to £7. 12s. 6d. nett Tyne; saltcake, 36s. 6d.; borax, English refined, £29., and boracic acid, £37. 10s., nett Glasgow; bichromate of potash, 4½d. nett, for Scotch and English deliveries; bichromate of soda, 3¾d., nett, for Scotch and English deliveries; chlorate of potash, 6¾d., less 5% any port; nitrate of soda, 8s. 6d. to 8s. 7½d.; sulphate of ammonia, £10. to £10. 2s. 6d. f.o.b. Leith; salammoniac, first and second white, £35. and £33., less 2½% any port; sulphate of copper, £15., less 5% Liverpool; paraffin scale (hard), 2 15/16d., and soft 2 7/16d. to 3d. per lb.; paraffin wax, 120°, semi-refined, 3⅝d. to 4d.; paraffin spirit (naphtha), 6d. a gallon; paraffin oil (burning) 5d., 5¼d. and 5½d. according to kind, at works, for Scotch buyers (English sales about 1d. lower); ditto (lubricating), 865°, £3. 10s. to £4., 885°, £5. 5s. to £7., and 890/895°, £6. to £8. Week's imports of raw sugar at Greenock, 43,528 bags.

New Companies.

HARDMAN AND HOLDEN, LIMITED.—This company was registered on inst., with a capital of £65,000., in £10. shares, to acquire and take over the of manufacturers of and dealers in and contractors for chemicals and chemi ducts, carried on by Messrs. J. Hardman and J. J. Holden, under the style man and Co., at Newton Heath, Clayton, and Blackburn, Lancs.; and business of manufacturers of alizarine and carbonizers of coal, carried on u style of Hardman and Holdens, at Newton Heath, Lancs. The subscribers

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J. Hardman, Stoke-on-Trent, chemical manufacturer .....
J. J. Holden, 23, Duke-street, Southport, chemical manufacturer .....
J. Holden, 12, Park-avenue, Southport, merchant .....
J. Clegg, 13, Scarisbrick-street, Southport, merchant .....
G. H. Holden, 41, Corporation-street, Manchester, engineer.....
W. Hardman, 32, Beaufort-avenue, Brooklands, chemist .....
R. Neill, jun., Beech Mount, Manchester, builder .....

HOT-AIR AND GAS FIRING CO., LIMITED.—This company was registered 10th inst., with a capital of £2,000., divided into 200 preferred shares of £ and 1,000 deferred shares of £1. each, to adopt an agreement dated March between the directors of the Mercantile and the Domestic Gas Company, of the one part, and Mr. E. L. Russell (for the company) of the other part promote the manufacture and application of gas for supplying light and dwellings, factories, etc.

MATHER AND PLATT, LIMITED.—This company was registered on the with a capital of £200,000., in £10. shares, to acquire and take over as a go cern the business of steel and iron founders, mechanical and electrical engine millwrights, now carried on by Messrs W. Mather and J. Platt, at the Salfo works, Salford, Manchester, under the style of Mather and Platt, and with thereto to enter into and carry into effect an agreement to be made with W. Mather and J. Platt. The subscribers are;—

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W. Mather, Salford Iron Works, Manchester, engineer .....
J. Platt, Salford Iron Works, Manchester, engineer.....
E. Hopkinson, Salford Iron Works, Manchester, engineer.....
C. Mather, Salford Iron Works, Manchester, engineer .....
T. Thorp, Salford Iron Works, Manchester, engineer .....
J. Milligan, Salford Iron Works, Manchester, engineer .....
A. W. Manson, Salford Iron Works, Manchester, cashier .....

Gazette Notices.

PARTNERSHIPS DISSOLVED.

E. SCOTT AND G. G. BLACKWELL, THE YOUNGER, Liverpool, firebrick m turers.

R. S. TIMMINS AND T. W. HOLLAND under the style of Ellam, Jones a Derby, emery, paint, and colour manufacturers.

BANKRUPTCY ACTS, 1883 and 1890.

Receiving Orders.

TODD, JOE, Carlisle, chemist.

Adjudications.

TODD, JOE, Carlisle, chemist.

HUGGINS, A. E., Bristol, oil and colour dealer.

SMITH, HENRY (trading as Henry Smith and Co.), Batley, Yorkshire, che druggist.

The Patent List.

This list is compiled from Official sources in the Manchester Te Laboratory, under the immediate supervision of George E. Da Alfred R. Davis, who report professionally upon the value of C Patents.

APPLICATIONS FOR LETTERS PATENT.

Grinding Mill for Salt. W. S. Petty. 8,234. May 2.
Smoke Preventing Furnaces. J. Ashworth, P. Ashworth, and R. A jun. 8,248. May 2.
Improvements in Refuse Furnaces. B. D. Healey. 8,249. May 2.
Extracting Gold and Silver from its Ores. C. M. Pielsticker. 8,257.
Manufacture of Colouring Matters from Paraphenylenediami Imray. 8,270. May 2.
Apparatus for the Manufacture of a Mixture of Hydrochloric A and Air. La Société A. R. Pechiney and Cie. 8,276. May 2.
Improvements in Crucible Furnaces. E. A. Neichsner. 8,299. Ma
Domestic Fire Grates. H. Hunt. 8,327. May 3.
Automatic Smoke Consumers. H. Earnshaw. 8,354. May 3.
Purifying and Softening Water. M. Mackay. 8,368. May 3.

Treating Wool Washings. R. B. Griffin. 8,375. May 3.
Manufacture of Gas from Water Vapour. A. Longsdon. 8,426. May 3.
Filters. W. E. Caddell. 8,439. May 3.
Filters. W. E. Caddell. 8,440. May 3.
Manufacture of Alpha Oxyuvitic Acid. J. Y. Johnson. 8,455. May 3.
Colouring Matter from Alpha Oxyuvitic Acid. J. Y. Johnson. 8,456. May 3.
Process for Distilling and Condensing the Bituminous Schists from Mineral Oils, etc. P. H. Bayle and A. Cambray. 8,462. May 3.
Manufacture of Vegetable Parchment. J. Robertson. 8,473. May 3.
Coke and Coal Washing Machinery. W. O. Wood and C. Burnett. 8,478. May 3.
Generating Ozonised Oxygen. J. E. Richardson. 8,484. May 5.
Painting on Silvered Glass. I. Armitage. 8,498. May 5.
Separating Solids from Liquids. C. Thompson. 8,514. May 5.
Separation of Gold and Silver from Auriferous or Argentiferous Sulphide of Antimony Ores. J. Simpson. 8,523. May 3.
Galvanic Batteries. W. Mosley. 8,529. May 5.
Aluminium Solder. A. J. Boult. 8,551. May 5.
Treatment of Blast Furnace Slag. J. J. Lish. 8,571. May 5.
Improved Galvanic Element. H. Beckmann, E. Beckmann, and J. Schmitt. 8,572. May 5.
Manufacture of Triphenylmethane Dyestuffs. J. Y. Johnson. 8,634. May 6.
Feed Water Purifiers. E. R. Joicey. 8,636. May 6.
Improvements in Fuel. R. Welford. 8,664. May 7.
Pressure Regulating Valves for Compressed Gases. D. Rylands and C. Emmet. 8,665. May 7.
Dissolving Cellulose and Allied Compounds. C. F. Cross, E. J. Bevan, and C. Beadle. 8,700. May 7.

IMPORTS OF CHEMICAL PRODUCTS

AT

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending May 7th.

Acetic Acid—
Germany, 10 pkgs. Union L Co., Ltd.

Acetone—
Holland, 15 pkgs. A. & M. Zimmermann

Alkali—
France, 102 c. Arnati & Harrison

Alum—
Holland, 180 pkgs. Phillipps & Graves

Alumina Sulphate—
Holland, 14 pkgs. Henderson, Craig, & Co.

Antimony—
E. Indies, 50 t Pillow, Jones, & Co.
N. Zealand, 7 H. Bath & Sons
Portugal, 50 J. Bamber
Japan, 5 L. W. Wolfenstein

Asbestos—
U. States, £480 Templeton Asbestos Co.

Barium Chloride—
Germany, 26 pkgs. Petri Bros.

Barytes—
Holland, 23 cks. J. Owen
Germany, 25 J. Kitchen, Ltd.
" 23 W. Harrison & Co.
" 19 T. F. Creed
" 24 O'Hara & Hoar
" 25 Pillow, Jones, & Co.
" 19 P. Jantzen
Holland, 23 W. Harrison & Co.
" 22 O'Hara & Hoar
" 52 A. Zumbeck & Co.

Bromide of Iron—
Germany, 9 pkgs. A. & M. Zimmermann

Caoutchouc—
Singapore, 101 c. Huttenbach & Co.
Ceylon, 1 Hoare, Wilson, & Co.
Zanzibar, 1 L. & I. D. Jt. Co.
U. States Columbia, ½ c. Prop. Bull Wf.
U. States, 102 c. J. H. & G. Scovell

Carbonic Acid—
Holland, 12 pkgs. Phillipps & Graves

Carbonic Acid Gas—
Holland, 10 pkgs. H. & G. Dutfield

Caustic Potash—
France, 11 drs. Petri Bros.
" 20 Beresford & Co.

Chemicals (*otherwise undescribed*)
Germany, 4 pkgs. Phillipps & Graves
" 68 T. H. Lee
" 64 A. & M. Zimmermann
France, £9 Hernu, Peron, & Co.

Cream of Tartar—
France, 5 pkgs. 2 cks. B. & F. Wf. Co., Ltd.
" 2 Robinson & Co.
" 5 M. Ashby, Ltd.
" 5 J. Puddy & Co.
Holland, 6 Middleton & Co.
France, 10 W. C. Bacon & Co.
" 12 E. W. Carling & Co.
Spain, 8 B. & F. Wf. Co., Ltd.

Dyestuffs—
Aniline
Holland, 10 pkgs. Suren, Hartmann, & Co.
Argols
Italy, 1,492 pkgs. B. Jacob & Sons
Cochineal
Canaries, 20 pkgs. Lewis & Peat
Extracts
U. States, 100 pkgs. Burton & Sons
Canada, 120 T. Ronaldson & Co.
Belgium, 50 L. J. Levinstein & Sons
Holland, 1 J. Sinclair & Son
Belgium, 50 cks. Leach & Co.
Gambier
Singapore, 203 pkgs. S. Barrow & Bro., Ltd.
" 473 Beresford & Co
" 825 R. & J. Henderson
" 431 Cox, Paterson, & Co.
Indigo
E. Indies, 29 chts. L. & I. D. Jt. Co.
" 3 Parsons & Keith
" 10 E. Bower & Co.
" 15 Stansbury & Co.
" 7 Ernsthausen & Co.
" 12 L. & I. D. Jt. Co.
Madder
Holland, 15 pkgs. Phillipps & Graves
Myrabolams
E. Indies, 830 pkgs. A. Hagan
" 156 Culverwell, Brooks, & Co.
" 141 Biemner & Laycock
" 343 Beresford & Co.
" 999 J. P. Alpe & Co.
" 1,569 Baxter & Hoare
" 1,279 Lucas & Spencer's Whf.
" 667 J. Graves
" 504 E. Davis & Co.
" 670 L. & I. D. Jt. Co.
" 6,895 Marshall & French
" 6,618 C. E. Fosbrooke
Saffron
France, 1 pkg. P. Fanet
Sumac
Italy, 200 pkgs. Sollas & Sons
Tanners' Bark
Adelaide, 25 t. C. C. Bryden & Co.
Sydney, 10 Fisher, King, & Co.
Adelaide, 9 Baxter & Hoare
Natal, 27 Hicks, Nash, & Co.
Germany, 9 Hale & Son
Adelaide, 98 Beresford & Co.
Natal, 8 A. & W. Nesbitt
Belgium, 10 Arnati & Harrison
Adelaide, 75 Devitt & Hett
Turmeric
Cochin, 72 pkgs. Major & Field
" 238 L. & I. D. Jt. Co.
" 190 Anderson, Weber, & Smith
E. Indies, 144 "
" 119 L. & I. D. Jt. Co.
Valonia
A. Turkey, 20 t. A. & W. Nesbitt
" 80 Hicks, Nash, & Co.
" 25 Boutcher, Mortimore, & Co.

Farina—
Germany, 369 pkgs. C. F. Webster & Co.
Holland, 300 R. G. Hall & Co.
" 40 J. Barber & Co.

Glucose—
Germany, 5 pkgs. 30 c. J. Barber & Co.
U. States, 50 304 Soundy & Sons
" 25 139 Fellows, Morton, & Co.
" 50 304 Pillow, Jones, & Co.
" 500 500 Baxter & Hoare
" 50 275 A. B. Curtis & Co.
" 50 266 W. Balkhin
" 400 2,240 U. Lighterage Co.
" 500 500 Ohlenschlager Bros.
" 750 750 J. Barber & Co.
" 10 118 Beck & Pollitzer
" 150 825 Prop. Chmbln's. Wf.
France, 200 200 J. Barber & Co.
" 200 200 L. Norman & Co.

Glycerine—
France, £1,270 Williams, Torrey, & Co., Ltd.
Belgium, 320 Langstaff & Co.

Lead Acetate—
Germany, 4 pkgs. Spies Bros. & Co.

Manganese—
Japan, 2 t. L. & I. D. Jt. Co.
Yokohama, 10 Dickson E. Recknell

Manure—
France, 185 t. J. Gibbs & Co.
E. Indies, 10 G. H. Wilson & Sons
Germany, 150 Lawes Manure Co.

Methyl Alcohol—
Belgium, 8 drs. T. & G. Blagden

Naphtha—
Holland, 54 drs. Burt, Boulton, & Co.

Ochre—
Holland, 1 pkg. 6 cs. Phillipps & Graves
France, 93 cks. W. Harrison & Co.

Painters' Colours—
Germany, 4 pkgs. Phillipps & Graves
U. States, 50 cs. A. C. Davey
Germany, 4 cks. Magee, Taylor, & Co.
" 14 C. Atkins & Nisbet
Holland, 5 R. Baelz & Co.
" 18 Craven & Co.
" 3 T. H. Lee
Germany, 20 G. Steinhoff
France, 2 Bennett S. S. Co., Ltd.
Italy, 10 Italo Brit. R. I. S.N. Co.
Germany, 17 L. & I. D. Jt. Co.
Holland, 9 W. Harrison & Co.
France, 25 Flageollet & Co.
Belgium, 3 T. Palmer
U. States, 1 J. Watson & Co.
Germany, 2 R. Baelz & Co.
" 2 H. Lambert

Paraffin Wax—
U. States, 4,342 brls. 911 cs. J. H. Usmar & Co.
" 220 C. Wall
" 150 T. T. Creed
" 205 H. Hill & Sons

Phosphate Rock—
Holland, 40 t. Magee, Taylor, & Co.
" 240 Lawes Chemical Manure Co.
France, 250 A. Hunter & Co.
Holland, 180 London Manure Co.
Belgium, 150 A. Hunter & Co.
" 115 Lawes Manure Co.
" 50 Miller & Johnson

Pitch—
France, 139 brls. Weatherley, Mead, & Co.

Plumbago—
Germany, 55 cks. B. Galloway
" 68 brls. H. J. Enthoven & Co.
Ceylon, 444 J. Thredder, Son, & Co.

Potassium Carbonate—
France, 200 c. Charles & Fox
Germany, 135 J. A. Reid
" 41 cks. Pillow, Jones, & Co.

Potassium Oxychloride—
Germany, 50 pkgs. G. Boor & Co.

Potassium Sulphate—
Germany, 204 pkgs. T. Farmer & Co., Ltd.
France, 1 Weatherley, Mead, & Co.

Rosin—
Germany, 5 brls. Magee, Taylor, & Co.
Belgium, 20 Lucas & Spencer's Wf.
Holland, 16 J. Barber & Co.

Saltpetre—
Germany, 9 cks. Craven & Co.

Silica—
Belgium, 104 bgs. W. Harrison & Co.

Sodium Acetate—
Belgium, 18 pkgs. Leach & Co.
France, 19 H. Lorenz

Stearine—
Belgium, 117 cks. H. Hill & Sons
U. States, 17 Beresford & Co.

Sulphur—
Italy, 13 t. G. Boor & Co.

Talc—
Austria, £100 M. D. Co.

Tallow—
Sydney, 200 cks. J. Greig
U. States, 100 H. Hehl
N. Zealand, 140 Phœnix Whrvs. Co.
" 4 Culverwell, Brooks, & Co.
Adelaide, 290 J. Owen
N. S. Wales, 74 Dalgety & Co., Ltd.
France, 3 W. H. Carey & Sons
Melbourne, 197 Pillow, Jones, & Co.
Sydney, 97 A. Frey & Co.
Canada, 36 R. Tucker & Co.
Adelaide, 76 Leach & Co.
" 220 Arnati & Harrison
Sydney, 60 J. Morrison & Co.
" 46 Coml. Banking Co. of Sydney
" 152 Anning & Cobb
N. Zealand, 11 J. Graves
France, 3 Mory & Co.
Adelaide, 40 Anning & Cobb
" 54 Pillow, Jones, & Co.
Sydney, 156 Leach & Co.
" 97 Goad, Rigg, & Co.
N. Zealand, 88 N. Z. L. & M. A. Co.
Melbourne, 230 Goldsbrough, Mort, & Co.
Tasmania, 15 L. & I. Dk. Co.
Adelaide, 64 De Lissa, Sons, & Co.

Tartaric Acid—
Holland, 6 pkgs. Middleton & Co.
" 2 J. Owen
" 2 W. C. Bacon & Co.

Ultramarine—
Germany, 5 cs. J. Kitchin, Ltd.
Holland, 4 cks. Phillipps & Graves
Germany, 20 G. Steinhoff
Holland, 5 7 pkgs. Hernu, Peron, & Co.
" 20 Thames S. T. & L. Co., Ltd.

Varnish—
Belgium, 6 pkgs. Stobbs, Wilson, & Co.
France, 2 G. W. Wheatley & Co.

Verdigris—
France, 2 pkgs. C. Brumlen
" 5 Williams, Torrey, & Co., Ltd.

Vermilion—
Germany, 4 cs. Phillipps & Graves
White Lead—
Belgium, 20 cks. Colthurst & Harding
Germany, 39 Randall Bros.
" 22 M. Ashby, Ltd.
" 19 Colthurst & Harding
" 24 H. Lambert
" 14 W. A. Rose & Co.
" 13 Grogs, Sherwood & Co.
Holland, 26 Spies Bros & Co.
Zinc Oxide—
Germany, 10 cks. Beresford & Co.
U. States, 100 brls. M. Ashby, Ltd.
Holland, 25 "
" 50 Burrell & Co.
" 50 M. Ashby, Ltd.

LIVERPOOL.

Week ending May 5th.

Acetate of Lime—
New York, 2,074 bgs.
Acetic Acid—
Rotterdam, 9 btls.
Ammonia—
Havre, 10 cs. Cunard S. S. Co.
Antimony—
Antofagasta, 22 bgs. Rosing Bros. & Co.
In transit, 33 cks.
Boracic Acid—
Leghorn, 16 cks. Shropshire Union Railway and Canal Co.
" 65
Borax—
Valparaiso, 2,316 bgs.
Antofagasta, 1,327 sks.
Leghorn, 4 cks.
Carbonic Acid Gas—
Rotterdam, 25 tubes.
Chemicals *(otherwise undescribed)*
Rotterdam, 5 cks.
Colours—
Rotterdam, 3 cs. 26 cks.
Cottonseed Oil—
New York, 350 brls.
Cream of Tartar—
Barcelona, 5 hds.
Rotterdam, 4 cks.
Marseilles, 10 Allan Bros. & Co.
Dyestuffs—
Algorobilla
Huasco, 1,331 sks.
Coquimbo, 340 R. B. Steele & Co.
Annatto
New York, 10 brls.
Argols
Bordeaux, 22 cks
Patras, 9 cs. Frangopulo & Co.
Cochineal
Teneriffe, 20 bgs. Beach & Co.
Divi Divi
Amsterdam, 185 bgs. Browne, Geveke & Co.
Extracts
New York, 5 brls Herich, Penner & Co.
" 50 bxs.
Madder
Rotterdam, 2 cks.
Myrabolams
Bombay, 939 bgs. D. Sassoon & Co.
" 300 Forbes, Forbes & Co.
" 2,704
Saffron
Valencia, 4 cs.
Sumac
Genoa, 70 bgs. N. W. Jackson
Palermo, 350 J. Young & Co.
" 325
Venice, 50
Fiume, 25 bls. F. Levy
Farina—
Fiume, 130 sks.
Glucose—
New York, 500 brls.
Glycerine—
Rotterdam, 8 t. 8 cs.
Kainit—
Hamburg, 704 bgs.
Lead Acetate—
Hamburg, 18 cks.
Manganese—
Coquimbo, 600 t.
Carrizal, 890
Nitrate—
Callao, 90 bgs.
Ochre—
Rouen, 130 cks. Co-op. W'sale Society, Ltd.
Leghorn, 65
Marseilles, 28
Paint—
Marseilles, 10 pkgs.
Paraffin Wax—
New York, 70 cs.
Phosphate—
Ghent, 600 bgs.
Pitch—
Amsterdam, 41 cks.
Marseilles, 73 1 cs.
Potash—
Rotterdam, 3 cks. 1 cs.
Pyrites—
Huelva, 1,741 t. Matheson & Co.
" 1,143 Tennants & Co.
Rosin—
New York, 1,496 brls.
Maranham, 127 pkgs. H. Evans & Co.
Salt—
Callao, 10 blks. Duncan, Fox & Co.
Saltpetre—
Hamburg, 22 cks.
Kurrachee, 166 bgs. W. & R. Graham
Soap—
Bari, 2 bxs.
Naples, 46 cs. Paul Behrends
Philadelphia, 900 bxs. 50 crts.
Rotterdam, 1 ck.
Marseilles, 1 cs. Allan Bros. & Co.
" 7
Soapstone—
Genoa, 508 bgs.
Stearine—
New York, 6 hds.
Sulphur—
Catania, 200 bgs. 100 t.
Tallow—
New York, 96 hds. 20 tcs.
In transit, 6 cks. 10 cs.
Boston, 178 brls.
Baltimore, 650 tcs. 375 brls.
Philadelphia, 100 93 hds. 75 cks.
Tartar—
Bordeaux, 16 cks.
Naples, 6 R. Powles
" 5
Tartaric Acid—
Rotterdam, 16 cks.
Ultramarine—
Rotterdam, 6 cks.
Verdigris—
Bordeaux, 7 cks.
Waste Salt—
Halifax, 300 t. G. O. Dobell & Co.
White Lead—
Rotterdam, 58 cks.
Ghent, 5
Zinc White—
Amsterdam, 20 brls.
Zinc Oxide—
Rotterdam, 50 cks.
Zinc Sulphate—
Hamburg, 1 ck.

GLASGOW.

Week ending May 12th.

Alkali—
Terneuzen, 4 jars.
Aniline Colours—
Rotterdam, 3 cs. 7 cks J. Rankine & Son
Colours—
Antwerp, 1 cs.
Stettin, 10 cks.
Rotterdam, 24 2 cs. 2 bxs. J. Rankine & Son
Hamburg, 6
Cream of Tartar—
Marseilles, 8 cks. 8 brls.
Rotterdam, 15 J. Rankine & Son
Dyestuffs—
Alizarine
Rotterdam, 42 cks. 1 cs.
" 130 1
Argols
Marseilles, 5 brls.
Extracts
Antwerp, 7 cks.
Terneuzen, 8
Madder
Marseilles, 5 brls.
Rotterdam, 5 cks. J. Rankine & Son
Myrabolams
Bombay, 333 bgs.
Farina—
Stettin, 100 bgs.
Hamburg, 200
Glucose—
New York, 150 brls.
Ochre—
Dieppe, 5 cks.
Paint—
In transit, 1 crte.
Pitch—
Archangel, 1,242 brls. Maclean, Todd & Co.
Rosin—
New York, 546 brls.
Soap—
Antwerp, 1 cs.
Philadelphia, 500 bxs.
Sodium Acetate—
Antwerp, 20 cks.
Stearine—
Antwerp, 200 bgs.
Terneuzen, 225
Tallow—
New York, 780 tcs. 35 brls.
Tar—
Archangel, 706 brls. Maclean, Todd & Co.
Tartar—
Oporto, 6 cks.
Bordeaux, 2
Ultramarine—
Antwerp, 5 cs.
Rotterdam, 8 cks. J. Rankine & Son
Varnish—
New York, 13 brls.
In transit, 3 css.
White Lead—
Antwerp, 16 cks.
Terneuzen, 4
Rotterdam, 55
Zinc Oxide—
Antwerp, 75 cks.
Terneuzen, 40
Zinc White—
Stettin, 25 cks.
Rotterdam, 50 J. Rankine & Son

HULL.

Week ending May 7th.

Barytes—
Antwerp, 20 bgs. Bailey & Leetham
Bremen, 45 cks. Tudor & Sons
" 23
Chemicals *(otherwise undescribed)*
New York, 449 bgs. Wilson, Sons & Co., Ld.
Hamburg, 1 ck. Lofthouse & Saltmer
Bremen, 3 cs. 10 kgs. Veltmann & Co.
Dunkirk, 15 pks. Wilson, Sons & Co., Ld.
Antwerp, 47 "
Colours—
Amsterdam, 2 cks. W. & C. L. Ringrose
Hamburg, 4 cks. Sissons Bros. & Co.
Ghent, 20
Stettin, 25 cks. Wilson, Sons & Co., Ld.
Rouen, 1
Bremen, 9 23 cs. Veltmann & Co.
" 3 6 G. Malcolm & Son
Flushing, 26 cks. 21 cs. 4 pks. Zeeland S. S. Co.
Rotterdam, 5 cs. Hutchinson & Son
" 4 cks. 17 pks. 1 cs. G. Lawson & Sons
" 34 36 25 8 pkgs. W. & C. L. Ringrose
Antwerp, 3 brls. Wilson, Sons & Co.,
" 84 cks.
Hamburg, 1 Cammell, Haigh & Co.
" 2 cs.
Cottonseed Oil—
New York, 100 brls. Wilson, Sons & Co., Ld.
Cream of Tartar—
Rotterdam, 2 cks. W. & C. L. Ringrose
Dyestuffs—
Alizarine
Rotterdam, 66 cks. 3 cs. 58 pks. W. & C. L. Ringrose
Indigo
Trieste, 10 cs. Wilson, Sons & Co., Ld.
Madder
Rotterdam, 2 cs. Wilson, Sons & Co., Ld.
Myrabolams
Bombay, 1,300 pkts.
Sumac
Palermo, 800 bgs. Wilson, Sons & Co., Ld.
" 395
Valonia
Smyrna, 334 bgs. 7 t.
Farina—
Harlingen, 447 bgs.
Ghent, 200 bxs.
Antwerp, 10 Wilson, Sons & Co., Ld.
Stettin, 110 "
Danzig, 100
Hamburg, 50
Glucose—
New York, 150 brls.
Guano—
Gullholmen, 1,168 bgs. Hart Bros.
Lead Acetate—
Stettin, 32 cks. Wilson, Sons & Co., Ld.
Manure—
Ghent, 101 t. Wilson, Sons & Co., Ld
Paint—
New York, 140 pks. Wilson, Sons & Co., Ld.
Paraffin Wax—
N. York, 1,127 pks. Wilson, Sons & Co., Ld.
Pitch—
Hamburg, 59 cks. H. F. Pudsey
" 30 W. Jackson & Son
Salt—
Hamburg, 711 bgs. G. Lawson & Sons
Soap—
Bari, 150 cs. Wilson, Sons & Co., Ld.
Soda—
Rotterdam, 22 cks. W. & C. L. Ringrose
" 112 Reckitt & Sons
Stearine—
Antwerp, 13 brls. Wilson, Sons & Co., Ld.
Sulphur—
Bari, 50 t. 200 bgs.
Catania, 22 pks. Wilson, Sons & Co., Ld.
Talc—
Bordeaux, 100 bgs.
Tallow—
New York, 250 pks. 2 cs. Wilson, Sons & Co., Ld.
Tartaric Acid—
Rotterdam, 2 cs. Hutchinson & Son
Ultramarine—
Rotterdam, 2 cs. Hurst & Cooke
Hamburg, 4 cks.
Rotterdam, 33 5 cs. Hutchinson & Son
" 4 Gibson Bros.
Varnish—
New York, 4 brls. Wilson, Sons & Co., Ld.
White Lead—
Rotterdam, 18 cs.
Antwerp, 12 cks. Bailey & Leetham
Amsterdam, 11 Gibson Bros.
Rotterdam, 45 Tudor & Sons
" 9 Sissons Bros. & Co.

TYNE.

Week ending May 7th.

Antimony—
Hamburg, 382 cs. Tyne Steam Shipping Co.
Barytes—
Rotterdam, 24 cs. Tyne Steam Shipping Co.
Colours—
Hamburg, 3 cks. 30 cs. Tyne Steam Shipping Co.
Glucose—
New York, 223 brls. Furness, Withy & Co.
Plumbago—
Antwerp, 1 ck. Tyne Steam Shipping Co.
Salt—
Hamburg, 100 bgs. Tyne Steam Shipping Co.
Saltpetre—
Hamburg, 9 cks. Tyne Steam Shipping Co.
Sulphur—
Pomaron, 1,550 t.

Tallow—
New York, 165 hds. Furness, Withy & Co.

Yarnish—
Antwerp, 6 cs. Tyne Steam Shipping Co.

GOOLE.

Week ending April 27th.

Antimony—
Boulogne, 5 brls.

Caoutchouc—
Boulogne, 36 brls. 40 bls.

Dyestuffs *(otherwise undescribed)*
Boulogne, 80 cds. 25 cs.

Dyestuffs—
Alizarine
Rotterdam, 13 brls.

Farina—
Hamburg, 1,650 bgs.
Delfszyhe, 1,150

Glucose—
Calais, 300 bgs.

Muriate—
Rotterdam, 35 brls.

Phosphate—
Ghent, 816 bgs.
Dunkirk, 800

Potash—
Hamburg, 10 cds.
Dunkirk, 54 dms. 15 cds.

Potassium Carbonate—
Hamburg, 4 cds.

Saltpetre—
Rotterdam, 100 bgs.
Hamburg, 6 cds.

Sodium Silicate—
Rotterdam, 35 brls.

Solvent Naphtha—
Rotterdam, 2 brls.

Waste Salt—
Hamburg, 335 t.

GRIMSBY.

Week ending April 30th.

Chemicals *(otherwise undescribed)*
Malmo, 6 cds.
Hamburg, 17 pkgs.

Dyestuffs *(otherwise undescribed)*
Dieppe, 5 cds.

Farina—
Hamburg, 250 pkgs.

Size—
Antwerp, 20 pkgs.

Zinc Ashes—
Antwerp, 9 cds.

EXPORTS OF CHEMICAL PRODUCTS

OF

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending May 11th.

Acids—
Rio de Janeiro, 10 cs. £11
Hong Kong, 1 t. 5 c. 17

Alum—
Cape Town, 2 t. 4 c. £16

Alum Cake—
Melbourne, 10 t. 19 c. £28

Ammonium Carbonate—
St. Petersburg, 22 t. 10 c. £591
Newcastle, 2 64
Bilbao, 2 61

Ammonium Chloride—
Bussorah, 1 t. £32
Cologne, 1 1 c. 33
Galatz, 10 16

Ammonium Nitrate—
Algoa Bay, 1 t. 14 c. £104

Ammonium Sulphate—
Philadelphia, 20 t. 12 c. £245
Rotterdam, 51 560
St. Kitts, 6 63
St. Vincent, 5 59
Ghent, 20 6 220

Arsenic—
Sydney, 2 t. 2 c. £24
Boston, 25 275

Bisulphide of Carbon—
Rotterdam, 7 t. 11 c. £105
Philadelphia, 10 12 157

Borax—
Hamburg, 4 c. £16
Harlingen, 4 13
N. York 11 18

Carbolic Acid—
N. York, 15 cks. £70
Hamburg, 11 c. 25
Philadelphia, 9 73
Boston, 1 t. 9 c. 110

Caustic Soda—
Auckland, 4 t. 10 c. £49
E. London, 1 16 21

Calcium—
Melbourne, 21 t. 2 c. £60

Calcium Hypophosphite—
Philadelphia, 10 c. £135

Chemicals *(otherwise undescribed)*
N. York, 15 cs. £200
Oamaru, 21 kgs. 20
Bangkok, 12 pkgs. 25
Wellington, 6 20
Lyttleton, 3 cks. 22
Yokohama, 1 cs. 14

Citric Acid—
Seville, 10 c. £84
Hamburg, 6 kgs. 11 131
Genoa, 1 t. 5 196
Melbourne, 9 27
N. York, 1 5 181
Sydney, 10 78
St. Petersburg, 17 25 kgs. 345
Hamburg, 11 c. 6 kgs. 4 cks. 301

Coal Products—
Aniline
N. York, 34 pkgs. £680
Anthracene
Rotterdam, 53 cks. £210
Benzol
Calais, 20 cks. £173
Rotterdam, 48 239
Philadelphia, 20 drs. 258
Creosote
Philadelphia, 5 cs. £47
Huelva, 2,750 brls. 1,306
Coal Tar Dyes
Boston, 3 cks. £178
N. York, 3 120
Rio de Janeiro, 1 cs. 19
Creosote Oil
Huelva, 2,750 brls. £1,316
Naphthalene
Marseilles, 28 cks. £29
Pitch
Dunkirk, 764 t. £1,460
Gijon, 967 1,639
St. Nazaire, 695 1,042
Pyridine
Hamburg, 12 cks. £109
Tar
Calcutta, 200 rnlts. £115
Bombay, 155 78
Legan, 250 brls. 200
Danzig, 200 150
Natal, 25 rnlts. 16
Toluol
Philadelphia, 20 drs. £238

Condy's Fluid—
Melbourne, 20 cs. £45

Copper Sulphate—
Lisbon, 5 t. £75
Bordeaux, 6 3 c. 86
" 11 17 75

Cream of Tartar—
Otago, 5 c. £22
Wellington, 14 67
E. London, 2 8
Adelaide, 11 47
Acajutla, 5 cks. 10
Wellington, 1 8 136

Disinfectants—
Penang, 100 drs. £35
Hamburg, 19 cks. 95
Melbourne, 4 cs. 14
Natal, 19 33
Santos, 10 11

Flowers of Sulphur—
Cape Town, 250 pkgs. £230

Glycerine—
Baltimore, 20 t. £283
Shanghai, 4 c. 17

Hydrochloric Acid—
Bombay, 6 c. £9

Hydrofluoric Acid—
Algoa Bay, 12 c. £40

Manure—
Barbadoes, 155 t. £1,550
St. Kitts, 46 493
St. Lucia, 300 2,870
St. Vincent, 10 11 51
Malaga, 14 8 112
Trinidad, 35 306
Berbice, 80 205
Rouen, 32 225

Mirbane—
New York, 27 pkgs. £120
Sydney, 14 c. £48

Nitric Acid—
Bombay, 1 t. 2 c. £49

Oxalic Acid—
Calcutta, 5 c. £13

Phosphorus—
Melbourne, 5 cs. £47
E. London, 5 50
Adelaide, 3 34

Potassium Chlorate—
B. Ayres, 8 c. £27

Potassium Prussiate—
Melbourne, 2 c. £10
B. Ayres, 2 12

Potassium Sulphate—
St. Vincent, 3 t. 5 c. £35

Saltpetre—
Lisbon, 1 t. 16 c. £37
B. Ayres, 10 11
Rotterdam, 2 3 45
Oporto, 6 121
Natal, 21 8 449

Salts of Soda & Lime—
New York, 2 c. 10 cks. £134

Soda—
Capetown, 1 t. 9 c. £6
Hamburg, 6 7
Algoa Bay, 1 13 7
Hamburg, 2 18 277

Sheep Dip—
Mossel Bay, 10 cs. £28
Capetown, 52 pkgs. 40

Soda Ash—
St. Vincent, 2 t. 9 c. £19

Soda Crystals—
Colombo, 1 t. £4
Cape Town, 11 c. 2

Sodium Bicarbonate—
Castle Cape, 10 c. £3
Auckland, 4 t. 40

Sodium Hyposulphite—
Melbourne, 1 t. £9

Sodium Sulphate—
Melbourne, 1 cs. £11
Ghent, 110 t. 165

Strontium Nitrate—
New York, 5 t. 7 c. £140

Sulphur—
Lisbon, 250 brls. £211
Madeira, 20 16
Melbourne, 2 t. 16 c. 31
Natal, 2 16 25
Bundaberg, 20 160

Sulphuric Acid—
Algoa Bay, 6 t. £24
Bombay, 18 c. 23
Singapore, 15 cs. 15
Natal, 25 25

Superphosphate—
Barbadoes, 120 t. £450

Tartaric Acid—
Halifax, 5 cks. £136
Castle Cape, 2 c. 13
Melbourne, 1 t. 10 164
East London, 3 19
Bilbao, 1 4 134
Acajutla, 5 13
Wellington, 5 29

LIVERPOOL.

Week ending May 11th.

Acetic Acid—
Lisbon, 15 c. 1 q. £9
Montreal, 1 2 1 32
Hamburg, 11 18 3 364
Halifax, 9 1 13
Rotterdam, 2 1 2 62
Adelaide, 10 14
Melbourne, 1 31

Alum—
Valparaiso, 2 t. 15 c. £16
Malaga, 38 brls. 45
Soverabaya, 6 t. 36
Alexandria, 2 18 c. 18
Patras, 1 15 11
Volo, 1 6
San Francisco, 50 300
Talcahuano, 1 10 9
Aran, 1 10 9
Alexandretta, 2 18 16
Bahia, 1 6
Galatz, 4 23
Melbourne, 3 16

Alum Cake—
Calcutta, 12 t. 14 c. 3 q. £46
San Francisco, 5 7 16

Ammonia—
Valparaiso, 3 c. £9

Ammonium Carbonate—
Genoa, 10 c. £16
Sundswall, 1 t. 1 1 q. 35
Odessa, 2 5 65
Barcelona, 2 12 2 78
Stockholm, 1 14 2 44
Rouen, 3 5 90

Ammonium Chloride—
Montreal, 2 t. 8 c. 4 q. £78
Melbourne, 19 2 22
Patras, 4 7
Barcelona, 4 5 137
Beyrout, 3 12 101
Philadelphia, 26 1 646
Messina, 11 1 19

Ammonium Sulphate—
Antwerp, 50 t. £600
Antigua, 30 15 c. 2 q. 308
Ghent, 50 13 527
Demerara, 50 13 533
Barbadoes, 50 9 2 550
Valencia, 205 11 2,154
G. Canary, 28 12 1 295
New Orleans, 28 280
Leghorn, 25 9 2 255
Valencia, 256 4 2,662
Las Palmas, 26 5 1 273

Antimony Sulphate—
Havana, 1 c. 3 q. £6

Barium Nitrate—
Vigo, 4 c. 1 q. £5

Bleaching Powder—
Boston, 522 cks.
Chicago, 55 bxs.
N. York, 199
Odessa, 21
Vigo, 35
Baltimore, 112
Boston, 367
Copenhagen, 50
Genoa, 34
Montreal, 20

Borax—
Cadiz, 10 c. £14
Constantinople, 12 18
Ibrail, 1 t. 13 1 q. 49
Mexico City, 2 60

Antwerp, 1 2 33
Stockholm, 4 8 3 118
Alexandria, 1 1 32
Brisbane, 20 kgs.
Sydney, 40
Cadiz, 2 brls.
Constantinople, 3 cks.
Hamburg, 26
Ibrail, 10

Boracic Acid—
Christchurch, N.Z., 10 c. £20
Havre, 2 t. 1 q. 75
Montreal, 17 1 34

Calcium Chloride—
Odessa, 15 t. 1 c. £34

Carbolic Acid—
Hamburg, 16 c. 3 q. £29
Hiogo, 10 25
Odessa, 2 t. 14 4 131
Rotterdam, 4 2 12
Amsterdam, 4 10 180
Calcutta, 6 drms. 19
New Orleans, 8 t. 3 c. 2 q. 313
N. York, 1 1 3 45
B. Ayres, 8 8

Caustic Soda—
Adelaide, 32 dms.
Alexandria, 10
Algoa Bay, 14 bxs.
Alicante, 7
Batavia, 12
Bordeaux, 17
Boston, 640
Chicago, 27
Galatz, 40
Hamburg, 26
Havana, 20
Leghorn, 15
Lisbon, 20
Montreal, 380
Nantes, 35
Odessa, 270
Otago, 6
Philadelphia, 100
Port Allegre, 20
Progresso, 20
San Francisco, 100
Smyrna, 20
Amsterdam, 40 kgs.
Baltimore, 50 135 brls.
Beyrout, 35
B. Ayres, 50
Cadiz, 6
La Guayra, 10
Malaga, 23 16
Naples, 35
N. York, 239 120
Santander, 30
Santos, 100
Savanilla, 29
Valencia, 30
Vigo, 10

Chemicals *(otherwise undescribed)*
Alexandria, 1 t. 10 c. £49
Constantinople, 1 33
Christiania, 3 5
Ibrail, 1 1 34
Yokohama, 3 104
Valparaiso, 10 20
Malta, 1 33

Citrochloric Acid—
Lisbon, 1 c. 2 q. £8

Cobalt Oxide—
Gijon, 3 q. £45

Copperas—
B. Ayres, 2 t. 12 c. 3 q. £5
Volo, 2 5 5
Beyrout, 3 10 6
Rio de Janeiro, 2 18 3 5

Copper Sulphate—
Nantes, 62 t. 15 c. £1,036
Constantinople, 9 3 q. 7
Odessa, 28 14 2 424
Tarragona, 17 4 2 256
Ghent, 45 1 3 686
Bordeaux, 164 1 4 2,628
Galatz, 10 7
Marseilles, 24 8 360
Rouen, 93 15 1453

Cream of Tartar—
St. John's, Nfld., 1 c. £5

Disinfectants—
Sierra Leone, 2 cs. £5

Dried Blood—
G. Canary, 4 t. 2 c. 1 q. £25

Glycerine—
Boston, 5 t. 3 c. £120
Bilbao, 8 4 218
Rotterdam, 8 14 227

Guano—
Santander, 1 t. 2 q. £12

Gypsum—
N. York, 35 t. 8 c. £126
Philadelphia, 4 11

Manure—
Valencia, 50 t. 9 c. 2 q. £135

Magnesia—
Odessa, 1 cs.

Magnesium Carbonate—
Vera Cruz, 4 c. £6
Vigo, 2 cs.

Magnesium Chloride—
Boston, 40 dms.
N. York, 38

Magnesium Sulphate—
Barbadoes, 22 bgs.
Honolulu, 10 cs.
Rio de Janeiro, 20 kgs.

Oxalic Acid—
Melbourne, 2 t. £55

Oxide of Iron—
Calcutta, 3 t. £43

Paint—
Barcelona, 20 dms.
Calcutta, 4 cks. 40 kgs.
C. Town, 9 cs. 75
Cienfuegos, 1 ck.
Gothenburg, 100 bgs.
Guayaquil, 52 pkgs.
Halifax, 1 cs.
Havana, 3 cks. 1 cs.
Jaffa, 4
Kingston, Jam., 16 pkgs.
Las Palmas, 4 dms.
Lisbon, 280 kgs. 131 pkgs.
Maranham, 21 dms.
Mollendo, 1 pkg. 40 kgs.
Montreal, 139 dms.
N. York, 3 cs. 6 brls. 450 cks.
Odessa, 89 cks.
Para, 1 kg. 19 cks.
Patras, 35 kgs.
Philadelphia, 2 cs.
Port Allegre, 11 pkgs. 20 kgs.
Quebec, 14 dms.
Rio Grande, 575 brls.
Rio de Janeiro, 2 cks.
Rouen, 18
St. John's, Nfld., 1 cs. 56 brls.
Samarang, 1 43
Santos, 5 70
Seville, 1 ck.
Valparaiso, 109 brls. 40 cks.
Varna, 74 kgs.
Algiers, 3 dms.
Constantinople, 1 bx.
Honolulu, 6
Ibrail, 5 cks.
Lagos, 7
Leghorn, 24
Sagua la Grande, 2
Salaverry, 29 bxs. 7 brls.
Shanghai, 90 cs. 5 dms.
Tampico, 2
Tientsin, 3 pkgs.
Vera Cruz, 3 cs.
Yokohama, 3

Painters' Colours—
Barcelona, 6 cks.
Bilbao, 20
Adelaide, 2 bxs.
Batavia, 6 dms.
Beyrout, 15
Boston, 8

Phosphorus—
Havana, 7 cs. £90
Hiogo, 25 414
Shanghai, 10 62
Yokohama, 10 94

Pitch—
Rouen, 1 t. 2 c.
Genoa, 105

Potash—
Bahia Blanca, 3 c. 3 q. £10

Potassium Bicarbonate—
N. York, 1 t. 10 c. £58

Potassium Bichromate—
Mexico City, 2 t. 4 c. £75
Halifax, 9 1 q. 15
Marseilles, 6 4 3 210

Potassium Carbonate—
Montreal, 4 c. 2 q. £6
N. York, 5 t. 7 86

Potassium Chlorate—
Havana, 3 t. 6 c. 1 q. £200
Hamburg, 10 28
Gothenburg, 6 280
Rotterdam, 1 47
N. York, 25 1,147
Naples, 1 59
Stockholm, 2 10 143
Melbourne, 9 3 23
St. Petersburg, 22 1,088
Rosario, 3 2 13
B. Ayres, 5 1 17
Hiogo, 22 10 1,106
Monterey, 3 3 10

Potassium Muriate—
Barbadoes, 41 bgs. £34

Potassium Prussiate—
Montreal, 10 c. 3 q. £30

Potassium Silicate—
Amsterdam, 1 t. 4 c. 2 q. £6

Salt—
Axim, 5 t.
Baltimore, 540
Boston, 400
Brisbane, 72½
Cape Town, 20
Dunedin, 20
Halifax, 940 10 c.
Iquique, 30
Melbourne, 350
Montreal, 406 3
Para, 99½
Quebec, 13 11 c.
Rotterdam, 100
Salt Pond, 5
Sydney, 410
Valparaiso, 2 3
Antwerp, 100
Buguma, 25
Calcutta, 2,971
Duluth, 65
Faroe, 183
Manaos, 10
New Carlisle, 354
Opobo, 140
Rangoon, 1,000
San Francisco, 149 19
Sierra Leone, 46
Winnebah, 7

Salt Cake—
Philadelphia, 69 t. 11 c. £172
Baltimore, 323 10 789
N. York, 1¾

Saltpetre—
Pernambuco, 5 t. 14 c. 1 q. £129
Melbourne, 1 22
Rio de Janeiro, 17 2 20
Barbadoes, 1 10 3 26
G. Canary, 1 2 17
Piræus, 3 64
Para, 10 12
N. York, 115 1,725
Cabadella, 1 13 1 39
Porto Allegre, 17 3 20

Sheep Dip—
B. Ayres, 1,800 drs. 25 cks. £522

Soap—
Alexandria, 2 cs.
Algoa Bay, 8 11 bxs.
Antwerp, 200
Attoaboe, 116
Bombay, 61 300
Brisbane, 2½ t.
Calcutta, 3 cs. 9 bxs.
Cameroons, 40
N. York, 2 dms. 1 ck. 675 bxs.
Philadelphia, 3 cks
Rotterdam, 705 bxs. 32 dms.
St. John's, Nfld., 266
Accra, 435
Addah, 80
Antigua, 50
Appam, 50
Axim, 50
Barbadoes, 650
Batavia, 4,685
Babhurst, 4
Bayin, 294
Belize, 775
Belgrave, 30
Benin, 350
Boston, 6 cs.
Brass, 200
Buguma, 100
C. C. Castle, 70
Cape Town, 70
Constantinople, 40 pkgs.
Curacao, 75 1 cs.
Gibraltar, 480 5
G. Canary, 640
Granada, 80
Havre, 600
Honolulu, 50
Lagos, 135
Las Palmas, 937
Lisbon, 1
Malta, 105
Monrovia, 18
Montreal 150
Old Calabar, 1,600
Opobo, 1,120
Aran, 50
Para, 100
Patras, 20 pkgs.
P. Elizabeth, 45
Rangoon, 1,000
St. Lucia, 135
St. Vincent, 100
Salonica, 40
Shanghai, 4,346
Sherbro, 530
Sierra Leone, 96
Singapore, 50
Tabou, 20
Teneriffe, 120
Valparaiso, 100
Warre, 150
Winnebah, 75

Soda Alkali—
Adelaide, 50 brls.

Soda Ash—
Baltimore, 139 tcs. 100 cks.
Boston, 25
B. Ayres, 100 brls. 100
Para, 6
Pelotas, 100
Rio de Janeiro, 200
Smyrna, 150
Bahia, 15
B. Ayres, 50
Corfu, 100
Dunedin, 45
Galveston, 10
Montreal, 18
N. York, 1,168 tcs. 328 400
Oamara, 14
Oporto, 26
Piræus, 10 brls.
Rosario, 25
San Francisco, 144 cks.
Santos, 60
Vera Cruz, 5
Wellington, 15 tcs. 21

Soda Crystals—
Calcutta, 20 cs.
Malta, 50 cks.
Alexandria, 22 brls.
Boston, 250
Chicago, 2 cs.
Constantinople, 50
Demerara, 30
Havre, 34 cks.
Hong Kong, 100
Montreal, 167
Napier, 34 kgs.
Philadelphia, 167
San Francisco, 334
Smyrna, 50
Wellington, 50

Sodium Bicarbonate—
Calcutta, 497 kgs.
Melbourne, 50 48 pkgs.
Mexico City, 80
N. York, 200
Valparaiso, 10
Victoria, B. C., 5 5 cs.
Vigo, 8 brls.
Bombay, 350
Boston,
Cadiz, 4
Christchurch, 80
Constantinople, 60
Dunedin, 200
Havre, 60
Marseilles, 65
Nantes, 100
Napier, 20
Odessa, 1,080
Otago, 40
Rotterdam, 100
San Jose de Guatemala, 60
Stockholm, 60 kgs. 4 cks.
Sydney, 193 4
Wellington, 115
Yokohama, 1,000

Sodium Biborate—
Hamburg, 19 t. 6 c. 2 q.
N. York, 4
Montreal, 17 1
Stettin, 3 8 1

Sodium Carbonate—
Boston, 84 brls.
N. York, 112
St. John's, Nfld., 2 kgs.
Rotterdam, 50

Sodium Chlorate—
Hamburg, 6 c.
Antwerp, 10
Rotterdam, 10
St. Petersburg, 4 18

Sodium Hyposulphite—
Montreal, 5 t 9 c.
Naples, 3 brls.

Sodium Silicate—
Calcutta, 4 cks.
Mauritius, 4 brls.
Montreal, 104
N. York, 25
Para, 10 3
Santander, 32

Sodium Nitrate—
Venice, 6 t. 10 c. 1 q. £53
Genoa, 6 13 2 53
Christiania, 2 9 3 25
Leghorn, 6 3 52
Cheribon, 40 3 407
Sulphur—
Vera Cruz, 50 t. £281
Melbourne, 2 16
Pernambuco, 5 6 1 44
Trinidad, 7 bgs. 6
Boston, 667 519
Galatz, 8 brls. 6
Dunedin, in bulk (about 49 t.), 246
Montreal, 10 cks. 334 bgs. 290
Porto Allegre, 1 t. 9
Sulphuric Acid—
Mollendo, 4 c. 2 q. £7
Superphosphate—
G. Canary, 4 t. 1 c. £12
Strontia—
Rotterdam, 17 t. £30
Tallow—
Bombay, 13 cks.
Malaga, 2 brls.
Tar—
Kustendjie, 20 brls.
Salaverry, 19
Yarnish—
Bilbao, 1 cs. 6 brls.
N. York, 1
Barcelona, 1 ck.
Verdigris—
Melbourne, 3 c. 3 q. £10
Zinc Chloride—
N. York, 2 t. 15 c. 3 q. £19

GLASGOW.

Week ending May 12th.

Alkali—
Dunedin, 3 t. 13 c. £27
Ammonia—
Trinidad, 109 t. 16¾ c. £868
Ammonium Sulphate—
Barbadoes, 71 t. 14¾ c. £830
Demerara, about 71 t. 713
Benzol—
Rotterdam, 6 dms. £100
Bichrome—
Gothenburg, 99 c. £165
Rouen, 201 280
Antwerp, 196½ 315
Stockholm, 2 cks. 25
Bleaching Powder—
Bombay, 4 t. 4 c. £44
Melbourne, 13 5 103
Borax—
Montreal, 5 t. 6 c. £149
Carbolic Acid—
Straits, 10 glns. £7
Dyestuffs (*otherwise undescribed*)
Dunedin, 1 t. 11½ c. £63
Dyestuffs—
Alizarine Colours
Dunedin, 11 c. £75
Extracts
Montreal, 224½ c. £325
Quebec, 65
Fustic Extract
Quebec, £94
Indigo
Dunedin, 4 c. £83
Melbourne, 31 £59. 16s.
Hydrochloric Acid—
Bombay, 7 t. 14 c. £36. 18s.
Iodine—
Rotterdam, 1 ck. £375
Lead Acetate—
Bombay, 3 t. 8¼ c. £56
Quebec, 3 4½ 70
Linseed Oil—
Bombay, 4 t. 16 c. £111
Dunedin, 4 17¼ 158
Cape Colony, 5 6
Stockholm, 1 ck. 4
Litharge—
Montreal, 9 t. 7 c. 120
Bombay, 49 32
Quebec, 5 5½ 80
Magnesium Sulphate—
Dunedin, 2 t. 9¼ c. £20
Calcutta, 5 16¾ 26
Manganese—
New York, 97 c. £43
Manure—
Nantes, 4 t. 5¼ c. £30
Phillippines, 6 5¼ 52
Barbadoes, 131 350
Demerara, 105 11¾ 1,045
Paint—
Bombay, £270
Rotterdam, 30 dms. £6. 10s.
Dunedin, 661
New York, 24½ c. £25. 15s.
Colombo, 40 30
Straits, 1 t. 2¼ c. 23
Barbadoes, 39¾ 40. 10s.
Demerara, 2 7½ 33
Painters' Colours—
Melbourne, £52
Phillippines, 26
Paraffin Wax
Bombay, 12¾ c. £23. 15s.
Dunedin, 11 t. 16 375
Hungary, 2 69
Riga, 10 cks. 96
Pitch—
Montreal, 85 t. £120
Gothenburg, 78 209
Karachi, 20 10 c. 60
Malta, 125 23. 15s.
Genoa, 15 4 24
Straits, 2 10¾ 20
Antwerp, 154 18 193
Potassium Bichromate—
Karachi, 1 t. 1¼ c. £32
Rotterdam, 13 cks. 118
Malta, 4 19¾ 163
Quebec, 25 44
Amsterdam, 12 765
Potassium Prussiate—
Rouen, 11 t. 4¾ c. £625
Salt—
Barcelona, 9 t. 8 c.
Soap—
Phillippines, 28½ c. £20
Demerara, 2 t. ½ 25
Soda Ash—
Philadelphia, 31 t. 3 c. £170
Sulphuric Acid—
Karachi, 37 t. 10 c. £187
Madras, 58
Phillippines, 20
Tallow—
Karachi, 1 t. 4½ c. £26
Rotterdam, 226 310
Tar—
Karachi, 53 t. 13½ c. £105
Madras, 11 12 28
Riga, 100 brls. 65
Yarnish—
Christiania, 5 brls. £4
Dunedin, 5 4
White Lead—
Dunedin, 11 t. 10 c.
Colombo, 25

HULL.

Week ending May 7th.

Alkali—
Hamburg, 1 cs.
Riga, 49 cks.
Benzol—
Rotterdam, 8 dms. 2 cks.
Bleaching Powder—
Harlingen, 40 cks.
Stettin, 78
Caustic Soda—
Hango, 40 dms.
Helsingfors, 20
Konigsberg, 40
Reval, 100 cks.
Chemicals (*otherwise undescribed*)
Antwerp, 1 cs.
Amsterdam, 20 pkgs.
Bombay, 40 cks.
Bremen, 10 pks.
Christiania, 5
Copenhagen, 20
Drontheim, 310 slbs.
Gothenburg, 5 55 306 40 kgs.
Hamburg, 15 cs. 45 55 dms. 12
Hango, 8 16 pks.
Konigsberg, 2
Libau, 8
Riga, 24
Rotterdam, 49
Chloroform—
Antwerp, 1 cs.
Cottonseed Oil—
Antwerp, 100 c.
Amsterdam, 207
Bordeaux, 34
Bergen, 6
Christiania, 70
Gothenburg, 253
Hamburg, 2,157
Konigsberg, 100
Norrkoping, 219
Rotterdam, 1,542
Stettin, 399
Disinfectants—
Kurrachee, 40 kgs.
Dyestuffs (*otherwise undescribed*)
Amsterdam, 1 ck.
Hamburg, 3 26 cs.
Riga, 6
Rouen, 1 kg.
Rotterdam, 90
Reval, 6 45
Linseed Oil—
Abo, 17 c.
Antwerp, 11
Bombay, 100
Bremen, 17
Bergen, 345
Christiania, 519
Copenhagen, 131
Drontheim, 69
Hamburg, 298
Kurrachee, 20
Rotterdam, 291
Stavanger, 131
Magnesia—
Hamburg, 1 cs.
Manure—
Dunkirk, 367 bgs.
Hamburg, 471
Naphthalene—
Riga, 111 bgs.
Ochre—
Amsterdam, 5 cks.
Copenhagen, 6
Rotterdam, 6 58 kgs.
Paint—
Antwerp, 3 cks.
Flushing, 1
Gothenburg, 20 kgs.
Painters' Colours—
Abo, 3 cks. 40 pks.
Antwerp, 62 51 10 dms.
Amsterdam, 26
Bordeaux, 2
Bombay, 12 86 cs.
Bremen, 1 cs.
Boston, 41 50
Bergen, 3 1 119
Christiania, 16 72
Copenhagen, 15 100 pkgs. 12
Drontheim, 5
Dunkirk, 5
Gothenburg, 1 1
Hamburg, 1 9 3
New York, 627
Riga, 3
Rouen, 3
Rotterdam, 38 5 kgs. 5 4
Reval, 1
Stavanger, 16
Stettin, 22
Pitch—
Abo, 30 cks.
Antwerp, 1 2 brls. 100 t.
Copenhagen, 30
Size—
Flushing, 30
Soap—
Copenhagen, 10 cs.
Gothenburg, 10 lbs.
Tallow—
Amsterdam, 3 cks.
Tar—
Abo, 100 cks.
Antwerp, 6
Amsterdam, 6
Bergen, 1
Christiania, 6
Copenhagen, 15
Drontheim, 5
Hamburg, 11
Helsingfors, 50
Konigsberg, 1
Rotterdam, 6 3 brls.
Ultramarine—
Antwerp, 1 cs.
Yarnish—
Antwerp, 7 cs. 4 dms.
Amsterdam, 1 ck. 11 brls.
Bombay, 100
Hamburg, 2
Konigsberg, 1
Rotterdam, 6
Stettin, 1 2

TYNE.

Week ending May 7th.

Alkali—
Bergen, 2 t. 16 c.
Copenhagen, 5 2
Alum Cake—
Montreal, 25 t.
Alumina Sulphate—
Montreal, 10 t. 2 c.
Ammonia—
Aarhuus, 14 c.
Ammonium Sulphate—
Genoa, 30 t.
Valencia, 97
Antimony—
Rotterdam, 1 t. 10 c.
Montreal, 13
Bleaching Powder—
Christiania, 10 t.
Horsens, 18 c.
Aarhuus, 15 2
San Francisco, 31 1
Nakskov, 1 10
Copenhagen, 33 2
Montreal, 66 4
Gothenburg, 60 4
Caustic Soda—
Genoa, 15 t. 7 c.
San Francisco, 36 5
Nakskov, 12
Montreal, 21 15
Chemicals (*otherwise undescribed*)
Pomaron, 13 c.
Litharge—
Copenhagen, 2 t. 6 c.
Montreal, 27 7
Oxalic Acid—
Genoa, 7 t. 8 c.
Paint—
Genoa, 1 t.
Naples, 8 c.
Painters' Colours—
Copenhagen, 4 t. 5 c.
Soda—
Rotterdam, 5 t. 18 c.
Montreal, 123
Quebec, 54 5
Soda Ash—
Genoa, 3 t. 4 c.
Gothenburg, 113 10
Soda Crystals—
Genoa, 9 t. 9 c.
Sodium Hyposulphite—
Montreal, 3 t. 5 c.
Sulphur—
Christiania, 25 t.
Rotterdam, 70 8 c.
Montreal, 1 10
Gothenburg, 30
Superphosphate—
Genoa, 50 t. 1 c.
Pernau, 281 15
Thomas' Phosphate—
Drontheim, 30 t.
White Lead—
Montreal, 309 t. 12 c.

GOOLE.

Week ending April 27th.

Bleaching Powder—
Ghent, 30 cds.
Chemicals (*otherwise undescribed.*)
Hamburg, 24 cds. 40 dms.
Rotterdam, 79
Coal Products (*otherwise undesc'd.*)
Ghent, 8 cds.
Hamburg, 15
Dyestuffs (*otherwise undescribed.*)
Hamburg, 2 cds.
Mirbane—
Rotterdam, 500 bgs.
Pitch—
Antwerp, 398 t.

GRIMSBY.

Week ending April 30th.

Chemicals (*otherwise undescribed*)
Dieppe, 28 cds.
Hamburg, 5 cs. 12 pkgs. 17 drs.
Naphtha—
Dieppe, 77 cds.

PRICES CURRENT.

WEDNESDAY, May 18th, 1892.

Prepared by Higginbottom and Co., 116, Portland Street, Manchester.

The values stated are f.o.r. *at maker's works, or at usual ports of shipment in U.K. The price in different localities may vary.*

	£	s.	d.
Acids:—			
Acetic, 25 % and 40 % per cwt.	7/- & 11/-		
,, Glacial ,,	50/-		
Arsenic S.G., 2000° ,,	0	13	6
Fluoric per lb.	0	0	3¾
Muriatic (Tower Salts), 30° Tw. per bottle	0	0	10
,, (Cylinder), 30° Tw. ,,	0	3	0
Nitric 80° Tw. per lb.	0	0	2¼
Nitrous ,,	0	0	1¾
Oxalic nett ,,	0	0	3
Phosphoric, 1750° ,,	0	1	2½
Picric ,,	0	0	10¼
Sulphuric (fuming 50 %) per ton	15	10	0
,, (monohydrate) ,,	5	10	0
,, (Pyrites, 168°) ,,	3	5	0
,, (,, 150°) ,,	1	5	0
,, (free from arsenic, 145°) ,,	1	7	6
Sulphurous (solution) ,,	2	15	0
Tannic (pure) per lb.	0	1	2
Tartaric ,,	0	0	11¾
Arsenic, white powdered nett per ton	10	17	6
Alum (loose lump) ,,	5	5	0
Alumina Sulphate (pure) ,,	5	0	0
,, ,, (medium qualities) ,,	4	15	0
Aluminium per lb.	2s. 8d. to	0	3 2
Ammonia, ·880=28° per lb.	0	0	3
,, =24° ,,	0	0	1¾
,, Carbonate nett ,,	0	0	3¼
,, Muriate per ton	21	0	0
,, ,, (sal-ammoniac) 1st & 2nd per cwt.	35/- & 33/-		
,, Nitrate per ton	40	0	0
,, Phosphate per lb.	0	0	10½
,, Sulphate (grey) London per ton	10	10	0
,, ,, (grey) Hull ,,	9	17	6
Aniline Oil (pure) per lb.	0	0	6¾
Aniline Salt ,,	0	0	6¼
Antimony per ton	45	10	0
,, (tartar emetic) per lb.	0	1	0
,, (golden sulphide) ,,	0	0	10
Barium Chloride per ton	7	10	0
,, Carbonate (native) ,,	3	10	0
,, Sulphate (native levigated) ,,	45/- to	75/-	
Bleaching Powder, 35 % nett ,,	7	10	0
,, Liquor, 7 % ,,	2	10	0
Bisuldhide of Carbon ,,	11	15	0
Chromium Acetate (crystal) per lb.	0	0	6
Calcium Chloride per ton	2	5	0
China Clay (at Runcorn) in bulk ,,	17/6 to	35/-	
Coal Tar Dyes:—			
Alizarine (artificial) 20 % per lb.	0	0	8¾
Magenta ,,	0	3	9
Coal Tar Products			
Anthracene, 30 % A, f.o.b. London per unit per cwt.	0	1	2½
Benzol, 90 % nominal per gallon	0	1	7
,, 50/90 ,, ,,	0	1	3
Carbolic Acid (crystallised 40°) per lb.	0	0	4⅞
,, (crude 60°) per gallon	0	1	2
Creosote (ordinary) ,,	0	0	1
,, (filtered for Lucigen light) ,,	0	0	2
Crude Naphtha 30 % @ 120° C. ,,	0	0	9
Grease Oils, 22° Tw. per ton	2	2	0
Pitch, f.o.b. Liverpool or Garston ,,	1	8	0
Solvent Naphtha, 90 % at 160° per gallon	0	0	11
Coke-oven Oils (crude) ,,	0	0	3
Copper per ton	47	0	0
,, Sulphate ,,	15	10	0
,, Oxide (copper scales) ,,	45	0	0
Glycerine (crude) ,,	13	0	0
,, (distilled S.G. 1250°) ,,	45	0	0
Iodine nett, per oz.	0	0	9
Iron Sulphate (copperas) per ton	1	12	6
,, Sulphide (antimony slag) ,,	2	0	0
Lead (sheet) for cash ,,	11	15	0
,, Litharge Flake (ex ship) ,,	14	5	0
,, Acetate (white ,,) ,,	25	10	0
,, ,, (brown ,,) ,,	17	10	0
,, Carbonate (white lead) pure ,,	20	0	0
Nitrate ,,	20		0
Lime, Acetate (brown) per ton	5	17	6
,, ,, (grey) ,,	10	5	0
Magnesium (ribbon and wire) per oz.	0	2	3
,, Chloride (ex ship) per ton	2	7	6
,, Carbonate per cwt.	1	17	6
,, Hydrate per ton.	17	0	0
,, Sulphate (Epsom Salts) ,,	2	19	0
Manganese, Sulphate ,,	17	15	0
,, Borate per cwt.	2	12	6
,, Ore, 70 % per ton	4	5	0
Methylated Spirit, 61° o.p. per gallon	0	2	6
Naphtha (Wood), Solvent ,,	0	4	6
,, ,, Miscible, 60° o.p. ,,	0	4	5
Oils:—			
Cotton-seed per ton	19	10	0
Linseed ,,	20	0	0
Lubricating, Scotch, 890°—895° ,,	7	5	0
Petroleum, Russian per gallon	0	0	4½
,, American ,,	0	0	5½
Potassium (metal) per oz.	0	3	7
,, Bichromate nett per lb.	0	0	4½
,, Carbonate, 90% (ex ship) per ton	18	0	0
,, Chlorate per lb.	0	0	7
,, Cyanide, 98% ,,	0	2	2
,, Hydrate (Caustic Potash) 80/85 % per ton	22	10	0
,, ,, (Caustic Potash) 75/80 % ,,	21	0	0
,, ,, (Caustic Potash) 70/75 % ,,	20	15	0
,, Nitrate (refined) per cwt.	1	2	6
,, Permanganate ,,	3	10	0
,, Prussiate Yellow per lb.	0	0	10
,, Sulphate, 90 % (ex ship) per ton	9	15	0
,, Muriate, 80 % (do.) ,,	7	17	6
Silver (metal) per oz.	0	3	3¾
,, Nitrate ,,	0	2	10
Sodium (metal) per lb.	0	3	4
,, Carb. (refined Soda-ash) 48 % nett per ton	6	2	6
,, ,, (Caustic Soda-ash) 48 % ,, ,,	5	5	0
,, ,, (Carb. Soda-ash) 48% ,, ,,	5	7	6
,, ,, (Carb. Soda-ash) 58 % ,, ,,	6	5	0
,, ,, (Soda Crystals) ,, ,,	3	9	0
,, Acetate (ex-ship) ,,	16	5	0
,, Arseniate, 45 % ,,	10	10	0
,, Chlorate per lb.	0	0	8
,, Borate (Borax) nett, per ton.	29	10	0
,, Bichromate ,, per lb.	0	0	3¾
,, Hydrate (77 % Caustic Soda) (f.o.b.) nett pr. ton (10 ton lots)	11	10	0
,, ,, (74 % Caustic Soda) ,, ,, ,, (10 ton lots)	11	10	0
,, ,, (70 % Caustic Soda) ,, ,, ,, (10 ton lots)	10	10	0
,, ,, (60 % Caustic Soda) ,, ,, ,,	9	7	6
,, ,, (60 % Caustic Soda, cream) (f.o.b.) ,, (10 ton lots)	9	2	6
,, Bicarbonate ,,	6	12	6
,, Hyposulphite ,,	7	15	0
,, Manganate, 25% ,,	11	10	0
,, Nitrate (95 %) ex-ship Liverpool per cwt.	0	8	7½
,, Nitrite, 98 % per ton	30	0	0
,, Phosphate ,,	15	10	0
,, Prussiate per lb.	0	0	7¾
,, Silicate (glass) per ton	5	7	6
,, ,, (liquid, 100° Tw.) ,,	4	5	0
,, Stannate, 40 % per cwt.	3	5	0
,, Sulphate (Salt-cake) per ton.	1	16	6
,, ,, (Glauber's Salts) ,,	1	15	0
,, Sulphide ,,	7	15	0
,, Sulphite ,,	6	12	6
Strontium Hydrate, 100% ,,	8	10	0
Sulphocyanide Ammonium, 95 % per lb.	0	0	7½
,, Barium, 95 % ,,	0	0	5
,, Potassium ,,	0	0	7¼
Sulphur (Flowers) per ton.	8	10	0
,, (Roll Brimstone) ,,	6	10	0
,, Brimstone: Best Quality (nominal) ,,	5	0	0
Superphosphate of Lime (26 %) ,,	2	7	6
Tallow ,,	27	0	0
Tin (English Ingots) ,,	98	0	0
,, Crystals per lb.	0	0	6¾
Zinc (Spelter) per ton	22	10	0
,, Chloride (solution, 96° Tw.) ,,	6	10	0

serious apprehensions that the youthful progeny of our aristocracy residing at Eton College would get playing on the lines and stop the trains, they would perhaps have hesitated before raising such an objection. From the experience of latter years it would appear that whenever anyone has tried the experiment of stopping a train by getting on the lines the operation has usually been attended with disastrous results to the experimenter. If instead of raising every conceivable objection those which are *bonâ-fide* were carefully considered, and skill and knowledge brought to assist in obviating such objections, a much more satisfactory state of affairs would be reached. There are doubtless good reasons for controlling the transport of petroleum through the Suez Canal, the transport only being allowed to proceed in the day time being a wise suggestion; but provided fitting regulations are made, we see no reason why such traffic may not be safely prosecuted. Let, therefore, the time and energies of our best authorities be spent in perfecting these precautions, rather than in finding every conceivable objection which may be raised against the proposition.

PRESENTATION TO A WELL-KNOWN CHEMIST.

The presentation which, as we stated in our columns recently, it was proposed to make to Mr. Ivan Levinstein took place on Friday, at the Victoria Hotel, Manchester.

Mr. Levinstein is well known for the active part he takes in furthering the interests of the chemical and allied industries, being one of the Board of the Manchester Chamber of Commerce, chairman of the Chemical Section of that body, and a member of the Technical Education Committee who recently took over the Technical School. It will also be remembered that Mr. Levinstein rendered a great service to all chemical manufacturers by the way in which he met the proceedings instituted against him at the Manchester Assizes in April last.

There was a representative attendance, members of the London Section of the Society of Chemical Industry being present to witness the presentation, which consisted of handsome silver plate. The proceedings passed off successfully.

THE POLLUTION OF THE MERSEY AND IRWELL.

THE Police and Sanitary Committee of the House of Commons, presided over by Mr. F. S. Powell, on Tuesday considered the Mersey and Irwell (Prevention of Pollution) Bill, which is promoted by a Joint Committee consisting of representatives of the counties of Lancashire and Cheshire and the county boroughs of Bolton, Bury, Manchester, Oldham, Rochdale, Salford, and Stockport. The object of the Bill is to confer upon this Joint Committee additional powers for the purpose of dealing with the pollution of the rivers Mersey and Irwell and their tributaries within the jurisdiction of the Joint Committee. Originally the Bill was opposed by a number of petitioners, including most of the manufacturing and mining interests, but the result of negotiations has been an amicable arrangement, and the manufacturers now support the Bill. The only remaining petitioners are the Corporations of Bury, Bacup, Haslingden, and Rawtenstall, and the Rawtenstall Local Board, who raise the question of the incidence of taxation, and urge that the incidence shall be altered so as to charge a portion of the expense incurred under the Bill to the landowners. Mr. Pope, Q.C., and Mr. Fitzgerald appeared for the promoters; Mr. Moulton, Q.C., and Mr. Shaw represented the petitioners named.

Mr. Pope, opening the case of the promoters, said the object of the Bill was to give a statutory committee created under the provisional order of various authorities in the counties of Lancashire and Cheshire powers more extensive than were contained in the Rivers Pollution Act. The promoters hoped to be able to satisfy the Committee that the powers of the Rivers Pollution Act had been found insufficient for the purpose of securing the objects of the Act in connection with the rivers Mersey and Irwell and their tributaries. One of the most interesting features in connection with this inquiry was that as the result of discussion among the various interests involved t absolute agreement upon the general principle of the Bill. It first time in the history of the discussion of the question pollution that the authority charged with the prevention of was in complete harmony with manufacturers and others wh be affected by the Bill.

The question raised by the only remaining petitioners did to him to bear upon the question of the necessity for exten provisions of the Rivers Pollution Act. They rather sought with the question of incidence of taxation and how far the co would feel at liberty to go into that question in connection bill would hereafter have to be decided. The question pollution had aroused great interest in Lancashire for many ye in 1868 a Royal Commission was appointed to inquire how present use of rivers and running waters in England for the pu carrying off the sewage of towns and populous places and th arising from industrial processes and manufacture could be p without risk to the public health or serious injury to such proce how far such sewage and refuse could be utilised and got rid wise than by discharge into rivers and running waters or harmless before it reached them. Under the instructions them the Royal Commission made separate districts the su separate inquiry, the Thames basin being the subject of one, Mersey basin of another inquiry. The report of the Commis presented in February, 1870, and it gave a vivid descriptio condition of the Mersey and the Irwell. Mr. Pope exp'a difficulties which had been experienced by local authorities in e the provisions of the Rivers Pollution Act, and said that as soo Local Government Act of 1888 was passed the attention of the shire County Council was practically directed to the Mer Irwell, the result being the appointment of the joint committe resolved to promote the present bill. The rivers which wer the district of the joint committee were the Mersey (which had of 43 miles through the district) and its tributaries the Etherow Bollin, and Irwell (which had a course of 48 miles in the The Irwell had as tributaries the Irk (which if they were at station, Manchester, might be called the Ink, although when boy there were said to be men living who caught trout at fluence of the Irk and the Irwell), the Croal, and the Roac total area of this district was 400 square miles in Lancashire square miles in Cheshire. The total population was a lit 2,250,000 and the rateable value £10,000,000. The interest was so enormous and the pollution so excessive and exceptio the promoters thought this was a case in which Parliamen reasonably amend the provisions of the general law by an Ac would only be applicable locally. The number of works affe the bill in Lancashire and Cheshire was 657, the manufactories ing dye-works and printworks, bleachworks, paper-works, fellmongers, woollen manufactories, slack washing, soap chemical works, breweries, and stone polishers.

Mr. Moulton said he had an objection to raise at the outset o of the Bury and Bacup Corporations, and he desired to press strongly. By the Local Government Act of 1888 a statutory b been created to perform a certain function—namely, to admini Rivers Pollution Act of 1876. That statutory authority co fulfil any other purpose than that for which they were crea could they exercise any powers save those in relation to the Ac administration of which they were established.

The Chairman: Do you contest the right of the promoters duce the bill at all?

Mr. Moulton: I do. I say this is a statutory body, and crea for a certain purpose—namely, carrying out of the Rivers Pollut

Mr. Pope: I think that objection should have been raised second reading.

The Chairman: I was about to say that I think the objectio too late.

The Committee consulted, and the Chairman announced th were unanimous on the point. It was clear that the promote in court, and they must be heard.

Mr. Moulton said after that intimation he would not further the point.

Mr. J. T. Hibbert (chairman of the Lancashire County C who was then called, described the different steps which had cul in the promotion of the bill. The manufacturers interested had times met the Joint Committee, and they had always been able to an amicable understanding. Mr. Ritchie, the President Local Government Board, had expressed his entire sympathy object of the bill, but had objected to one portion of it, which h amended in order to remove his objection. He believed the the bill would be to benefit many manufacturers. In fact, t already been the experience in the paper trade.

The Chairman: May I take it that the map handed to the Co by the promoters represents the present condition of the r

Witness: It does.

eply to Mr. Hobhouse, the witness said he was sorry to have to at the counties of Derbyshire and Yorkshire (West Riding) had d to come within the area of the Joint Committee. The Com- agreed to omit them from the proposal on the condition that ould themselves deal with the pollution in their own districts.

s-examined by Mr. Moulton, the witness said the Joint Com- had given notice to twenty local authorities to stop pollution, e Committee had not taken any steps against manufacturers, e they had another object in view. Manufacturers had been in bit of placing their cinders not in the river, but so near the river hen there was a flood the flood water carried the cinders away. s convinced that the special powers in the bill were necessary to t that being done, and he was equally certain as to the necessity powers to deal with sludge, and the power given to magistrates summarily with cases under the Act.

Moulton said his case was that the existing powers were amply nt for all purposes.

xamined, the witness said that since the passing of the Rivers on Act the condition of the rivers in the district he represented en considerably worse than before. In fact, they were the by- f the whole county. He attributed that to a large extent to the ions and hampering provisions contained in the Rivers Pollution nd partly to the carelessness of the authorities.

Alderman J. Thompson (chairman of the Rivers Pollution Com- of the Manchester City Council), who was also examined, said l long taken a great interest in the question of rivers pollution. y years ago he lost a great deal of money through a flood in the Medlock. Shortly afterwards he was appointed chairman of the Pollution Committee. The Corporation had recently adopted a for disposing of the sewage of Manchester, and they hoped it be in full operation next year. It was the opinion of the Rivers on Committee and of the Corporation as a whole that the sought in this bill were necessary. The local Act of Man- contained much stronger powers than those sought by the Committee. It was certainly necessary to give summary juris- to the magistrates, because anything which tended to obviate would be a great advantage. It was delay which had made the Pollution Act practically a dead letter. A manufacturer would cinders near the river, and when a flood came they would be away. This occurred before proceedings could be taken against nd the matter was temporarily forgotten.

AL RATES ENQUIRY AND ALKALI WORKS AMENDMENT BILL.

MEETING of the Chemical and Allied Trades Section of the London Chamber of Commerce was held at the offices of the ber on Friday last week, for the purpose of considering what ned action should be taken by the Section in conjunction with ssociation of Coal Tar Distillers as regards the Canal Rates ry now proceeding under the Board of Trade.

Steel, the secretary of the Coal Tar Distillers' Association, ed the action which that body had taken. Their objections had y been formulated and lodged. They were anxious to secure me concessions under the Canal Enquiry that they had gained the Railway Rates Enquiry. It was the general feeling that the sts as a body were not interested although the manufacturers and it was resolved to support any action which the Mansion Committee might deem necessary to take for the protection of de interests; and with this object in view a guarantee fund was l to defray the necessary expenses. The Section also considered fect on chemical and allied industries of Mr. Ritchie's Alkali, Works Amendment Bill. It was thought that this measure, if , would be productive of grave injury to many of the smaller ries and might have the effect of driving them abroad altogether. er, it was believed that the real offenders would not be touched present Bill, inasmuch as dyeworks and works of a similar ter which give off noxious vapours, purposely carry on at times f their process of manufacture during the night, with the result y neighbouring chemical or alkali works usually is credited with g the nuisance complained of. It was reported that the chemical acturers of Liverpool, the Society of Chemical Industry, and the Tar Distillers' Association had already taken steps to oppose the nd it was resolved to second these efforts by a petition to the of Commons. A petition has since been lodged opposing the the following grounds:

That the extension of the provisions of the Alkali Act of 1881 to rks set forth in the schedule to the Amendment Bill would be a hindrance to trade, by reason of the restrictions proposed and that case of many of the works it would seriously hamper them in their le with the increasing competition of foreign manufacturers, thus g to drive these industries abroad.

(*b*) That the Bill is entirely unnecessary inasmuch as where grievances are alleged the complainants have very ample facilities and powers to prosecute under the Local Government Acts.

(*c*) That if further legislation is deemed necessary it is submitted that the present Bill is not sufficiently general, as the schedule thereto does not include many works which in their processes of manufacture are liable to emit gases at least as offensive and injurious as the works which form the subject of the proposed legislation.

(*d*) That the inclusion of certain works and the exclusion of others similarly conducted and equally requiring inspection—if such is necessary—in the schedule to the Bill, can only result in anomalies, inconveniences and difficulties, which would be a source of general dissatisfaction.

(*e*) That any Bill affecting the industries scheduled should contain provisions for the inspection of *all* works evolving certain specified noxious gases.

Sir Henry Roscoe and Mr. Jas. Stevenson have given notice of the following motion on the second reading of the Bill: "That no extension of legislation for the control of the escape of noxious vapours will be satisfactory which does not bring the processes in which certain specified noxious vapours are evolved under inspection and regulation."

THE EXPORTS OF PETROLEUM FROM U.S.A.

S. G. BROOK, Chief of the Bureau of Statistics, submits the following statement of the exports of mineral oils from the United States for the month of March, 1892:

	Gallons.	Dollars.
CRUDE PETROLEUM.		
Total for March, 1892	4,208,897	188,014
Total for March, 1891	7,318,088	424,846
Total for 9 months ending March 29, 1892	80,851,961	4,124,174
Total for 9 months ending March 28, 1891	74,326,528	4,836,290
NAPHTHAS.		
Total for March, 1892	1,028,805	68,140
Total for March, 1891	158,678	13,605
Total for 9 months ending March 29, 1892	10,945,694	784,121
Total for 9 months ending March 28, 1891	9,917,038	812,234
ILLUMINATING OILS.		
Total for March, 1892	42,496,329	2,431,111
Total for March, 1891	36,191,566	2,541,701
Total for 9 months ending March 29, 1892	412,489,954	24,843,429
Total for 9 months ending March 28, 1891	436,462,334	30,591,863
LUBRICATING OILS.		
Total for March, 1892	2,836,369	461,629
Total for March, 1891	2,839,197	411,754
Total for 9 months ending March 29, 1892	25,672,471	3,887,875
Total for 9 months ending March 28, 1891	25,227,519	3,582,973
RESIDUUM.		
Total for March, 1892	44,268	5,035
Total for March, 1891	165,984	8,224
Total for 9 months ending March 29, 1892	348,138	29,926
Total for 9 months ending March 28, 1891	1,277,398	60,286
TOTAL EXPORTS.		
Total for March, 1892	50,614,668	3,153,929
Total for March, 1891	46,673,463	3,400,130
Total for 9 months ending March 29, 1892	530,308,218	33,669,525
Total for 9 months ending March 28, 1891	547,210,817	39,883,646

THE LONDON WATER SUPPLY.

THE Royal Commission which sat not long since, for the first time, to enquire into the supply of water to London find that within the domain of the New River Company about twenty-eight gallons of water a day is supplied on an average to every man, woman, and child. It looks to be a tolerably copious douche—upwards of nine three-gallon pails of water every day for everybody. And yet a few years ago the American Congress got together statistics relating to the supply of a large number of the greatest centres of population throughout the world, and from these it appeared that comparatively speaking Londoners stood very low indeed in the scale. Even Hamburg had thirty-three gallons per head of population, and Leghorn had thirty. The big American towns left us far in arrear. Toronto had 77 gallons per head, Albany 80 gallons, Buffalo 87, Jersey City 99, Detroit 105, Chicago 119, and Washington no less than 155 gallons per head of the population. All over London our supply averages, we believe, about 29 gallons, but this, of course, includes water for all sorts of purposes—trade and manufacture, fires, street watering, and so on.

PALM OIL.

THE total import of palm oil into England is about 50,000 tons, valued at over £1,000,000., but it is considered that this is an exceedingly small commerce compared to what might be the case were the enormous resources fully, or even moderately utilised. For miles along the West Coast of Africa, extending between Cape Bianco and St. Paul de Loando, there are vast forests of palms, the oleaginous fruit of which has for centuries rotted unused on the ground. The oil palm forests at the back of the coast line of Cape Palmas and Elmina are said to be practically inexhaustible; and so also in the neighbourhood of Fernando Po, immense tracts are covered with the trees. Lagos furnishes the purest oil, for there are in commerce regular and irregular oils. When analysed, if the water and impurities exceed 2 per cent., an allowance is made, for often these oils contain 10 to 15 per cent. of water and impurities. Palm oil is eaten as butter by the natives, and used for anointing their bodies. Here it is used in the manufacture of soap and candles, and in South Wales in the preparation of tin-plates. Its non-drying qualities render it valuable as a preservative of the surfaces of the heated iron sheet from oxidation until the moment of dipping into the bath of melted tin, the sheets being rapidly transferred to that from the hot oil bath, which consists almost entirely of palm oil. In 1871, as well as in 1880 and 1891, the imports of palm oil into the United Kingdom exceeded 1,000,000 cwt. From 10,000 to 15,000 tons of palm oil are shipped direct from Africa to the Continent. The price of the oil has ranged from 35s. per cwt. in 1883 to 23s. in 1890.

DETECTING WATER IN PETROLEUM TANKS.

AN instrument for ascertaining and recording the amount of water lying beneath petroleum in a ship's hold or a storage tank has just been brought out. This instrument is the joint patent of Messrs. Boverton and Robert Redwood and H. Barringer.

The object of the instrument is to overcome the disadvantages which attended the practical use of the instruments hitherto employed for this purpose. The action of the instrument depends upon the change produced by the water upon a strip of paper prepared by chemical means so as to be unacted upon by oil, while the same is speedily and permanently altered by the action of water.

The instrument is very simple, as will be seen by the accompanying illustration. It consists of a hollow weighted brass cylinder, somewhat larger at its upper extremity than at its lower. A shallow groove is cut on both sides of this cylinder, alongside of which is a scale divided into inches and tenths of an inch. On the cylinder there is also a brass ring, which slides over the cylinder, fitting tightly on the top, and thus securing the prepared paper in the groove cut for its reception. The bottom part of the cylinder, as shown in the sketch, is supposed to have been sunk into a tank at the bottom of which there was eight-tenths of an inch of water, which is registered by the white portion of the paper. The use of the instrument is simplicity itself, all that is necessary being to slide the ring A to the lower end of the cylinder. Take a strip of the prepared paper, pass it over the pin, the ends of which will be seen projecting at the bottom of the cylinder, and adjust it so that an equal length of the paper is on each side of the pin, the prepared (brown) surface being turned towards the pin. Pass the paper, one side at a time, between the ring and the cylinder at the point where the groove or channel commences, and holding the cylinder near the top in the left hand, retain the paper tightly in position in the channels by the finger and thumb. Then slide the ring to the top of the cylinder, and the paper will be found firmly fixed on each side with, of course, the prepared surface outwards.

Having thus prepared the instrument for use, it is to be attached to a cord of suitable length and lowered into the tank the presence and depth of water in which is to be determined. When the instrument is nearing the bottom of the tank it should be lowered slowly and cautiously so that it may be retained in a vertical position. On touching the bottom it should rest undisturbed for such time as may be necessary to effect the requisite alteration of the chemically-prepared surface (about 30 seconds is usually sufficient), and on then being drawn up the depth of the water will be indicated on both sides of the instrument, thus giving a duplicate record, and showing in the majority of cases whether the instrument has retained its vertical position. The instrument is being made by Messrs. Fraser & Co., of London, who are the sole makers.

BLACK SMOKE AGAIN!

AT a recent meeting of the St. Helens Town Council, Dr. Robertson said he had had to make complaints against four firms, whose chimneys had emitted black smoke for periods of more than five minutes. One at Kurtz's Works emitted black smoke very badly, once for ten minutes in one hour and another time for nine minutes. There were also complaints against the Sutton Lodge Chemical Works and the St. Helens Collieries Company. In each case they had got replies promising that the matter should be attended to.

Mr. Burchall asked if ever he complained about the gases which came from the chemical works? The streets were sometimes filled.

Dr. Robertson said they would complain if they could find it.

Mr. Burchall said someone should find it, and asked whose duty it was.

Dr. McNicoll said it was Mr. Ballard's duty to find that out.

Dr. Gaskell asked if there was any complaint now of the Chance process.

Dr. Robertson thought there was not.

Mr. Massey said the gas was fearful at times. He had noticed a nasty smell coming from somewhere between ten and eleven o'clock.

Dr. Robertson observed that they would always get a certain amount of gas brought down at night time, because of the difference of the atmospheric temperature.

Mr. Massey said it was very bad indeed—enough to choke anyone.

Dr. Robertson said he had looked out for it, but had not noticed it.

The Chairman then intimated that this was all the public business, and we understand that the committee then proceeded to discuss the question of the improvement of the Corporation slaughter-house, which they afterwards inspected.

LEAD AND THE LIVERPOOL WATER.

ACCORDING to the recent report submitted by Dr. J. C. Brown to the Water Committee of the Liverpool Corporation, the results of the experiments he has made on the action upon lead of filtered and unfiltered water from Lake Vyrnwy and of a sample of Rivington water is as follows. The water was allowed to stand on sheets of lead for five days; and the amount of lead dissolved was then estimated. The results were as follows: Unfiltered Vyrnwy water: Parts of lead dissolved in every 100,000 parts after five days, ·8; total solids in solution, 3·76; reaction, slightly acid. Filtered Vyrnwy water: Parts of lead dissolved, ·08; solids in solution, 6·68; reaction, neutral. Rivington water: Parts of lead dissolved, ·23; solids in solution, 8·76; reaction, slightly acid. The unfiltered Vyrnwy sample, Dr. Brown says, would be objectionable for public supply; and the filtered sample, on the other hand, takes up less lead than ordinary Rivington water. The cause of the action upon lead is twofold: (1) The peaty matter in the water; and (2) the acidity of the water. Filtration removes the greater part of the first cause, while the second cause can be remedied either by admixture with a sufficient proportion of alkaline water, or by the addition of a small carefully calculated quantity of either milk of lime or soda ash previous to filtration. Mr. J. Parry, the Water Engineer, has also submitted a report to the Committee, in which he deals with that of Dr. Campbell Brown. He says that the reduced action of the filtered Vyrnwy water on lead, as compared with that unfiltered, is partly due to the influence of the limestone tunnels through which the water flows at Cynynion and Llanforda, as well as to the effect of passing through the sand filter-beds. With regard to the action of the Rivington water upon lead, he reminds the Committee that, when public attention was called to this subject in 1886, through the reports of lead-poisoning in Huddersfield and Sheffield, he submitted to Dr. Brown samples of water drawn from new lead-pipes in various parts of the city district after standing for over twelve hours in contact with the lead. Dr. Brown then reported that in districts supplied with well water, and with mixed Rivington and well waters, there was no trace whatever of lead; and in the few districts supplied wholly with unmixed Rivington water, only a slight and unimportant trace of lead was discovered. No unmixed Vyrnwy water has yet been supplied to the city.

THE TYNE CHEMICAL TRADE.—The chemical works that continue in operation are just now well employed, there being a good demand, with fairly remunerative prices, for the various products manufactured. The dismantling of the Union Chemical Works at Bill Quay has just been commenced. The work is being carried out by Messrs. Snowball & Co., who within the past twelve months have completed the dismantling of four other large establishments of a similar kind on the Tyne. The Union Chemical Works were formerly in the occupation of Messrs. Bell Brothers, of Middlesbrough.

Official Memoranda.

From the Board of Trade Journal.

THE SICILIAN SULPHUR INDUSTRY.

THE French Consul at Messina has recently addressed a report to his Government upon the condition of the sulphur industry in Sicily. He states that the production of sulphur in 1891 showed a decided falling off as compared with 1890, the amounts being 4,499,479 cantars (13 cantars = 1 ton) in the former and 3,817,053 cantars in the latter year. This diminution is owing in great measure to the fact that the large mines which represent three-fourths of the production worked with exceptional activity at the time of the last crisis, in order to distribute the general expenses over a much larger product, with the result that at the present time they are unable to show an increased out-turn, and in some cases there is a very decided diminution in the amount produced. Again, no new workings were begun during the period that the crisis lasted.

As regards the smaller mines, which are very numerous, these show no increase in production, while a large number have gone out of working altogether. In considering the question of the diminution in the supply of sulphur, account must also be taken of the variation in the number of hours devoted by the workmen to labour in the mines. When prices were low the Sicilian labourers were obliged to work like persons engaged in other industries, six days a week and as many hours as was found necessary, in order to extract the ore in sufficient quantity to enable them to draw an ordinary wage. With the enhanced value of the product came an increase in the price of labour, the workmen then commenced to work by the half-day with one day a week off, and then a reduction of the hours of labour was effected, to the extent that about 24 hours' work a week is now about all that an ordinary labourer in the sulphur mines performs. Consequently, as the working mining population is limited and is composed of special workmen, the production becomes more and more restricted.

Among other causes of diminution in the output may be mentioned the placing under cultivation of land productive of ore of an inferior quality, and which the owners thought it more to their advantage to cultivate than to work for sulphur, and the imposition of a new tax of 60 centimes per kilogramme upon the manufacture of mining powder.

The very gravest apprehensions are felt for the future of the sulphur industry in Sicily. It is expected that for some years to come the production will be to a great extent limited. In the first place a restriction of labour appears to be threatened by the action of the Italian Legislature affecting the employment of children. Of the latter many of 11 to 12 years of age are engaged in the mines carrying ore, and owing to the absence of capital it will be difficult for the mine owners to replace their labour by machinery.

The depth of the mines is continually increasing, particularly in the case of those mines in which shafts are sunk vertically, and these latter are by far the most important and the richest. With an increase of depth, difficulties also increase, these consisting of more improved methods of extraction, greater ventilation, and the employment of larger pumps, all of which require considerable outlay. It will, therefore, in the opinion of M. de Lalande, be some years to come before the average production of the last 10 years is again reached.

According to the chief engineer of the Sicilian mines, the falling off in the production of sulphur in 1891, as compared with 1890, amounted to over 58,000 tons, and this was owing to the wild speculations in Sicily, especially those which were engaged in between December 1890 and May of the following year, and which ruined many of those engaged in the sulphur industry. At this period also throughout the world (for Sicily furnishes nearly nine-tenths of all the sulphur used) merchants, agriculturists, and manufacturers, in fact consumers of all kinds, rather than purchase at the then exorbitant prices, exhausted their stocks, and if it became necessary to buy they confined their orders to a supply only just sufficient to carry them on from day to day.

The exhaustion of the stocks of sulphur in foreign countries brings into relief the fact that the falling-off in the demand is more accentuated in countries where sulphur is more particularly employed for agricultural purposes, and especially in the treatment of vines, as for example in France and Greece, than in countries like the United States, England, Austria, and Sweden, where sulphur is used chiefly in the various industries, and is therefore the object of frequent and direct purchases. From the United States, however, evidences are forthcoming of a tendency to substitute for certain industrial purposes pyrites for sulphur, but this substitution can only be effected slowly and in factories having had the time to renew their plant, and there is little probability of all of them acting in this respect simultaneously. This abandonment of sulphur in certain respects would find its compensation in the employment of the article by new industries or by the application of improved processes. In this connexion mention may be made of the methods now being attempted in Germany of extracting fatty substances and oils by the action of liquid sulphuric acid, and if, as is claimed, this system is superior, so far as results are concerned, to all those in vogue, it points in the future to a fresh outlet for sulphur and one not without importance.

M. de Lalande, speaking of the present condition of the sulphur market in Sicily, says that it is by no means unsatisfactory; the production certainly shows a tendency to restriction, but this in his opinion is due less to an absence of confidence than to the want of new outlets. Capital is wanting, labour is dear, and miners difficult to find, but in his opinion the outlook is far from discouraging, as the sulphur beds in Sicily still enjoy the reputation of being the finest in the world, in addition to which they are far from being exhausted, and there must always, from some quarter of the globe or other, be a demand for sulphur.

During the last six months of 1891 the quantity of sulphur exported from Sicily amounted to 1,680,067 cantars, of which the United States took 635,000, France 376,000, and the United Kingdom 148,000 cantars.

THE WORLD'S PRODUCTION OF COAL IN 1891.

The Pittsburgh *American Manufacturer* says:—"Judging from the returns for 1891 already received from the coal-producing countries of Europe, the year 1891 will show the greatest production of coal yet known. The only country that shows a decreased production is Belgium, and this is only 500,000 tons. Great Britain shows an increase of nearly 4,000,000 tons; Germany about 3,200,000 tons of bituminous coal and 1,300,000 tons of lignite; France increased production of all kinds some 116,000 tons, and Spain 104,000 tons. From the other coal-producing districts the production for 1891 has not been received. On the basis of the latest figures received the production of coal in Europe in 1890 and 1891, assuming that the production in Russia, Austria, Sweden, and Italy runs the same in each year as at the latest report, would be as follows":—

*Production of Coal in Europe.**

Country.	Years.	Production.	Years.	Production.
		Tons.		Tons.
Great Britain	1890	181,614,288	1891	185,479,126
Germany†	1890	64,373,545	1891	67,528,311
	1890	15,499,977	1891	16,818,845
France.....	1890	26,083,118	1891	26,199,745
Belgium	1890	20,365,960	1891	19,865,345
Spain‡.....	1890	1,210,082	1891	1,314,147
Russia‡	1889	6,207,800	1889	6,207,800
Austria‡	1889	8,592,876	1889	8,592,876
Sweden‡.....	1888	300,000	1888	300,000
Italy‡	1888	366,794	1888	366,794
Totals	—	324,614,440	—	332,672,989

* All production except Great Britain is in metric tons; Great Britain's in gross tons.

† First line bituminous, second line brown coal.

‡ Includes all grades of coal.

"This indicates an increased production of coal in Europe in 1891 over 1890 of more than 8,000,000 tons. The increase in anthracite in the United States was 4,500,000 tons. There are no figures for bituminous coal yet for 1891. The increase in 1890 over 1889 was 14,000,000 tons. It will hardly be as great in 1891, but it would not be at all surprising if the increase of production of all kinds of coal was 15,000,000 tons. What increase, if any, the other coal-producing countries of the world will show we cannot say. But little, probably. It is probable, however, that the world's production of coal in 1891 will be 28,000,000 to 30,000,000 tons greater than in 1890."

THE MERCURY MINES OF ALMADEN.

The following description of the mercury mines of Almaden is taken from the *Journal de la Chambre de Commerce de Constantinople*:—

The mercury mines of Almaden, in Spain, are at a short distance from the town of that name, following the valley in a northerly direction. The veins of the precious metal are disseminated a little haphazard, but those at present in working, form altogether a zone stretching for a length of from 160 to 170 metres, and which is only from 10 to 12 metres wide.

The depth of the bed is still unknown for the reason that when a vein is exhausted, the depth of the well is increased in order to reach a new vein. Between the different workable veins, there are beds of ores and rocks of different kinds; the average thickness of the unworkable beds varies between 10 and 37 metres.

The deepest gallery at present reaches 317 metres. A curious feature is that the farther the distance gone, the quality of mercury improves and the quantity increases.

In the 10th and 11th gallery (the deepest) the mercury runs, so to speak, from the rock as resin exudes from the trees; it can be gathered in small skin receptacles.

The rock varies in colour and passes from black to brilliant red; the more the colour approaches red, the more the quantity of mercury increases. Very often mercury is present under the form of cinnabar or sulphide.

The pits at present in working number three. The other old wells have been abandoned, and only serve in exceptional cases.

On delivery from the pits, the ore is smelted in vast furnaces, with enormous cupolas, beneath which a fierce fire is constantly kept burning.

Distillation is effected through a long and complete series of tubes, formed of thick jars, with a long and narrow neck, fitting into each other.

In the lower portion of these jars there exists a kind of small reservoir where the drops of mercury produced by the evaporation of the metal in a state of fusion are condensed. These drops are then collected and, with the aid of small pipes, stored in large iron barrels. A strong smell, which irritates the eyes and nostrils, escapes from the jars and barrels.

The production of mercury reaches about 55,000 to 60,000 *frascos* per annum; the *frascos* are enormous bottles of cast iron, which contain 4 arrobes of about 25 lbs. each. Each bottle, which measures 22 centimetres in height by 6 in width, weighs, when filled, about 100 lbs.

The workmen at present employed number about 2,000. There are also a thousand workmen who are employed out of the mines with machinery, furnaces, transports, and other works.

MINERAL DISCOVERIES IN GREECE.

The mineral wealth of the island of Milo has just been increased by the discovery of mines of barytes containing, it appears, a large quantity of silver.

According to the French Consul at Syra, explorations have been made in the localities of Mirovilia, Pikroudon, Castagnia, and at Teriades on the promontory of Vani to the north-east of the island. Everywhere the results have exceeded the highest anticipations.

At Mirovilia there have been opened six galleries of a total length of 104 metres and four wells of 11 metres each. Analysis has established the proportion of from 300 to 1,900 grammes of silver per ton of barytes.

THE COAL PRODUCTION OF GERMANY.

The following particulars of the coal production of Germany during the decennial period 1881-90 are extracted by the *Bulletin du Musée Commercial* from a report of the Belgian Consul-General at Nuremberg:

The extraction of coal in Germany amounted for the year 1881 to more than 48,000,000 tons, valued at about £12,612,000.; since then it has increased steadily, and in 1890 it exceeded 70,000,000 tons, representing a value of £26,902,000.

The production of England in 1890 amounted to 182,000,000 tons; Germany is second among those European countries producing coal; France then follows with 26,000,000. Notwithstanding the considerable progress in the working of the German collieries, the number of the latter has decreased during the last decennial period from 497 to 425.

The collieries of Bavaria are found in the provinces of Upper Franconia, Upper Bavaria, and in the Palatinate. Compared with the year 1881 the collieries of Upper Franconia, on the south-western slope of the Frankenwald, show, for 1890, an increased production of 7·8 per cent. The deposits in Upper Bavaria, near Miesbach, Pensberg, and Unterpeissenberg have increased their production in the course of the last ten years by 202,300 tons, or 69·5 per cent., the last figures registered showing a production of 290,500 tons; the value of the production of coal in Upper Bavaria has increased during the same period from £130,000. to £237,000.

The production of the Palatinate was in 1890: at St. Ingbert, 1,644,526 metric quintals, and in 1889, 1,865,831 quintals; at Mittelbexbach, in 1890, 27,860 tons.

In Lower Franconia, Ruhr coal is principally used; in Upper and Middle Franconia the coals of Bohemia and Saxony; in the Upper Palatinate those of Bohemia; and in Upper Bavaria, Lower Bavaria, and Swabia coal from the collieries of Upper Bavaria and Bohemia. The Sarre coals which come to Bavaria are used by the gas-works and railways.

It should be added that the production of Saxony was, in 1890, 12,100,000 tons, and that of Bohemia, for the same period, 8,900,000 tons of coal and 12,100,000 tons of lignite.

The consumption of coal at Nuremberg and in its environs is very *important*.

Industrial establishments use principally Bohemian lignite (*Böhmische Braunkohle*); private individuals use Saxony coal (from Zwickau); for American hearths use is generally made of anthracite, coming principally from Kohlscheid, near Aix-la-Chapelle, and from Ludwigszeche.

The reduction of the carriage rates (9 marks per 100 kilogrammes), which came into operation in the autumn of 1890, has compensated, as regards Nuremburg, for the increased prices resulting from the strikes.

PROTECTION OF FOREIGN EXHIBITS AT THE CHICAGO EXHIBITION.

Sir J. Pauncefote, Her Majesty's Minister at Washington, in a despatch to the Foreign Office, dated April 14th, transmits an Act of Congress, approved April 6th, 1892, providing that no citizen of any other country than the United States shall be held liable for the infringement of any patent granted by the United States, or of any trademark or label registered in the United States, when the act complained of is or shall be performed in connection with the exhibition of any article or thing at the World's Columbian Exposition at Chicago.

Reports of Companies.

THE NORTHWICH SALT COMPANY, LIMITED.

THE public inquiry into the circumstances attendant on the promotion and failure of this company was resumed last week at Bankruptcy-buildings, Carey-street, before Mr. Registrar Giffard.

Mr. C. J. Stewart attended as Official Receiver and liquidator, and Mr. R. Wright Taylor for a debenture holder.

The first witness called was Mr. Clive F. Brown, the nominal promoter and vendor, but he did not appear.

Mr. James Atkinson was next called, but again there was no response, and the Official Receiver said the Court would no doubt remember that Mr. Atkinson was the mysterious gentleman who appeared in print as the secretary of the company, but who had never been seen by any of the witnesses already examined. (A laugh.)

Mr. Hugh Gillmor was then questioned by the Official Receiver, and stated that he was one of the directors of the company. Mr. E. L. Clarke introduced certain salt properties to him, one of which comprised 27 acres of land at Northwich purchased by Mr. Clarke. Witness introduced Mr. Clarke to the National Debenture and Assets Corporation, who agreed to purchase the property for £27,000., and who subsequently, through Mr. Clive Brown as nominal vendor, sold it to the Northwich Salt Company for £80,000. For his service in introducing Mr. Clarke to the National Debenture and Assets Corporation witness received £7,000. in cash and shares from Mr. Clarke, that sum representing one-third of the profit made by that gentleman, and also £2,300. from the National Debenture and Assets Corporation, in cash and shares as a commission. The prospectus of the present company was drawn up by the National Debenture and Assets Corporation and was submitted to witness before it was issued to the public. The company was, in fact, brought out by the National Debenture and Assets Corporation, who paid the expenses up to allotment and were to get the principal share of the profits. He had never, to his knowledge, seen Mr. James Atkinson, who signed his name as secretary.

The Official Receiver.—Now, is he not Mr. James Kotchie?

The Witness.—No, I do not think so.

Replying to the Registrar, the witness said that his only knowledge of Mr. Atkinson was through having seen his name on the prospectus. He knew that Mr. Kotchie had passed by other names. The present company was the first in which he had been interested, so that he knew very little of company matters. He admitted that at a meeting of directors held in February, 1889, two fictitious names (Sangwin and Wilkinson) were given, but he only ascertained the fact when the Bread Union case came out. So far as he was concerned he was led by persons who had more knowledge of company matters than himself. The company practically went to allotment on a working capital of £7,000 or £8,000. They did so in the face of the prospectus, which stated that £36 000. would be sufficient for working capital. Some of the shares allotted to witness were in the name of his wife, but they eventually found their way to him. There was no reason for getting them issued in his wife's name. The directors soon found that the money in hand was insufficient to carry on the business of the company, and in April, 1889, they issued a fresh prospectus. He admitted that this prospectus contained incorrect statements with reference to the subscription and allotment of shares and the issue of debenture capital.

Mr. Stewart.—And as a matter of fact there was no practical security for the debentures?

ss replied that the operations had been commenced on the , which was valuable.
tewart.—Then we will say, except a valuable hole in the (Laughter.)
ss added there was plenty of brine, and that was very valu- he time.
ther examination he stated that other prospectuses were sub- issued, when the statements were repeated.
dward Lloyd Clarke was then examined, and stated that he possession of the property at the end of 1888 by purchasing s father-in-law at £200. per acre. He originally wanted his law to start the operations on the land, but that gentleman g on in years and preferred to sell the land to witness, who tly disposed of it to the National Debenture and Assets ion as stated by the last witness.
itness was also examined by Mr. Wright Taylor, and, after ther evidence had been given, the inquiry was adjourned till le of June.

CUMBERLAND IRON AND STEEL COMPANY, LIMITED.

DECISION TO WIND UP.

raordinary general meeting of the A, B, C, and D debenture nd of the shareholders of the West Cumberland Iron and npany, Limited, was held last Saturday at Carlisle. Mr. W. presided.—The Chairman, in moving that the Company be voluntarily and that Mr. Peat be appointed liquidator said last meeting six months ago he expressed some hope that ld improve and the Company would get over its serious , but since then, owing to the continued fall in the market pig iron and steel rails, without any diminution in the cost aterial, and hardly any appreciable reduction in wages, things from bad to worse, and it had been found expedient to ry department of the works. The A and B debenture ad resolved to call in their money, and the directors had best to give the shareholders the opportunity of keeping the n in their own hands. In one respect this Company would this second liquidation under a condition unprecedented ory of limited companies, for not a penny was owing to any- ide the debenture holders and the mortgagees. The total f the mortgages was £303,000., while the assets consisted of nd and book debts, which might come to £3,000.; stock in 0,000.; some shares in a Continental tramway, £3,000.; an lue by the Winnipeg and Hudson Bay Railway Company of 0,000., on which interest was also due since 1888; and the property and fixed plant and tin works, which cost over . After the last reconstruction scheme £45,000. out of the then raised went for the purposes of liquidation, and the as spent on repairs which ought to have been done before. favour of the Directors at this meeting had been sent in for tes out of a total of 43,365.—Alderman Stephenson, of New- id he was an unfortunate debenture holder who had lost but he did not intend to oppose the motion. They were , lamb-like shareholders—(laughter)—who sat at meetings children. (Laughter.) He then put some questions to the and Mr. Fletcher, in reply, said the payment of the debt to this company was now a first charge on new capital ay company had been authorised to raise by the Dominion nt. Of the amount paid for the last liquidation over went to Lloyd's Banking Company in Birmingham as money d been borrowed. So far as he knew there was no prospect g a sale of the property of the Company to anyone. The s resolution was then unanimously agreed to, and the meeting d.

WATER GAS IN LANCASHIRE.

ITION was presented in the Chancery Division, and was rd by Mr. Justice Stirling, recently, the prayer of which he Court would confirm a scheme for an extension of the of the Yorkshire Water Gas Company and an alteration in —Mr. W. B. Lindley, for the Company, explained that it was ed on the 30th April, 1889, with a capital of £151,000., to rights in water gas patents, with powers to grant licences for of York. They now desired to extend their operations to e, and had passed and duly confirmed resolutions to that he petition therefore asked the Court to sanction an alteration mpany's memorandum of association authorising them to nilar rights for Lancashire as they had for Yorkshire, and ction the changing of the Company's name to "The York- Lancashire Water Gas Company, Limited." Mr. Lindley he had the consent of the only creditors of the Company.— on being unopposed, his Lordship made the order applied for.

THE CULTIVATION OF COLZA IN FRANCE.

THE British Vice-Consul at Caen, in his last report referring to the refusal of the Chamber of Deputies during the past year to impose a tax on the importation of oleaginous seeds, says much discontent has consequently arisen, especially in the department of Calvados, among the cultivators and farmers. This may ultimately lead to a total cessation of the raising of colza, until a short time ago the most valuable of the crops cultivated in Calvados. The farmer has already been heavily handicapped by the introduction of mineral oils, and the impending abandonment of the cultivation of colza will be a local calamity as regards the farmers, and will be especially detrimental to the State itself in regard to the rearing of horses for army purposes, as nine-tenths of the horses required for the French cavalry are brought up in the department of Calvados, and their rearing is closely connected with the cultivation of the colza. The latter necessitates only a light draught work for the kind of horses required for military purposes during the rearing and training. The light work thus obtained is beneficial both to the farmer and Government and to the animal itself when young, and enables the farmer to dispose of the animal to the State at a slightly lower figure. The colza harvest commences at the beginning of July, and it has long been the custom of the cultivator to purchase as soon after as possible foals and young horses, according to their requirements, at the large horse fairs that occur during the months of September and October. If the cultivation of colza ceases to be remunerative to the farmer he will be compelled to replace it by beetroot, a change that will in a great degree ruin the rearing of horses for military purposes, as the cultivation of the beet involves heavier labour and draught work for the animals, which would necessitate the introduction and rearing of heavier and stronger horses not adapted for the cavalry requirements of the French army. Further, the rearing of horses on a large scale would soon have to give way to cattle, as they are more readily nourished, and thrive on roots, eating greedily the refuse of the sugar beet, which horses reject. The beetroot harvest does not commence until October, and, payments not being generally made until the January following, it would be impossible, especially for the smaller farmers, to make their purchases of young horses and foals as they have been in the habit of doing.

Legal Intelligence.

HOUSE OF LORDS.

(*Before Lord Herschell, Lord Watson, Lord Morris, and Lord Field.*)

YOUNG AND ANOTHER *v.* HERMAND OIL COMPANY.

This appeal from a decision of the Second Division of the Court of Session in Scotland raised a question as to an alleged infringement by the respondents of the appellants' patents for distilling mineral oil and ammonia from shale. The action was brought by the appellants against the respondents for royalties in respect of a number of retorts which the latter had put up for the distillation of shale, and which the appellants alleged were infringements of their patents. The courts below decided that the respondents were not liable. The appellants appealed.

The Solicitor-General for Scotland and Mr. Ure appeared for the appellants; and Mr. J. B. Balfour and Mr. David Dundas for the respondents.

The case was argued some time ago, when judgment was reserved.

Their lordships last week gave judgment reversing the decision of the Scotch courts, and holding that the appellants were entitled to the royalties they claimed, and ordering the cause to be remitted with a declaration, the appellants to have the costs of the appeal and the costs of the courts below.

NOTICE.

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ANSWERS TO CORRESPONDENTS.

E. K. M. (Chicago).—We are pleased to hear you find the journa so useful. We have made the alteration you notified.

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P. P.—We hope to have an opportunity of seeing the same soon.

Trade Notes.

SALT.—A new seam of salt, 19½ft. thick, has recently been discovered at Zurich in the Canton of Aargau.

WOOD PULP BEARINGS.—Wood pulp hardened in steel moulds under enormous pressure looks like hard rubber. Compounded with a little graphite it makes splendid bearings.

A FATAL EXPLOSION.—A terrible explosion of gunpowder occurred at the Actna Fireworks Company's factory, at Hartford, Connecticut, U.S.A., recently. The building was completely wrecked and eight persons were killed, while several others were injured.

NICKEL CARBONYL.—The compound of nickel and carbon monoxide recently discovered by L. Mond, is now utilised by the latter for effecting nickel plating, by either exposing the objects to the vapours or dipping them into a solution of the same in benzol or petroleum.

ANOTHER NEW SULPHITE MILL.—It is stated that negotiations are practically concluded for the erection of a second sulphite fibre mill at Rumford Falls, Me. The capital is said to be nearly all secured, and the company will soon be organised. It is expected to begin building operations next September and complete in 1893 the largest sulphite fibre mill in Maine.

SOCIETY OF CHEMICAL INDUSTRY: *London Section*.—A meeting of this society will be held at Burlington House, on Monday, May 30th, when the following papers will be read. "The manufacture of vinegar," by Mr. J. A. Nettleton; "The petroleum jellies of commerce," by Dr. S. Rideal; and "Certain aluminium alloys," by Dr. C. R. A. Wright.

ACID-RESISTING ENAMEL.—Amongst recent inventions is an anti-sulphuric acid enamel, now largely used in many electrical works For coating wood-work, iron, and copper in the neighbourhood of batteries it seems to have proved thoroughly successful. Even with strong sulphuric acid it will resist for weeks. It is also a perfect protection against acid spray. It is applied like varnish, and is supplied in black or other colours.

NEW LEAD ALLOY.—A new alloy of lead, very malleable and almost unattacked by acid, has been proposed by M. Worms for the manufacture of accumulator plates. He takes 945 parts of lead, 22 of antimony, and 13 of mercury. The lead is first smelted, the antimony is added, and the mercury is introduced at the moment of pouring into the ingot mould. A species of amalgamated lead is thus obtained which can be rolled in sufficiently thin sheets.

A LARGE CHIMNEY.—A chimney 350 feet high is being built for the Omaha and Grant Smelting Works, in Denver, Colo. It will be an octagon stack, 55ft. in diameter at the base, placed on a concrete foundation 18ft. deep, imbedding 20 tons of steel rails. There will be two stacks, one within the other, with a ladder-way between. The stack will be banded with 4½in. wide steel bands every 20ft., covered by the brick work. The contract price is about £10,600., and it is to be finished in 130 days. The other high chimneys in the United States are, *Engineering News* says, as follows:—At the Fall River Iron Works, 340ft., and the Clark Thread Mill stack in Newark, N.J. The stack at Freiburg is 460ft. high above ground. The total height of Townsend's chimney, near Glasgow, is 474ft. above ground.

THE USE OF ALUM.—At a recent meeting of the Camberwell Vestry, the public analyst in his report called attention to the extensive use of alum in baking powders. He complained that when action was taken to prevent such a form of adulteration, the action was quashed on the plea that alum was neither a food nor a drug, and therefore did not come within the Foods and Drugs Act. Though perhaps a nice legal point, the position is a direct contravention of the intentions with which this Act was framed.

ANOTHER VOLATILE NICKEL COMPOUND.—Schützenberger, in a recent number of the *Comtes Rendus*, has described experiments which apparently conclusively prove that nickel is volatile in presence of hydrochloric acid. Both when nickel chloride is reduced in a of hydrogen and when hydrochloric acid is passed over finely nickel, traces of nickel chloride are found in the further part of when heated to dull redness. Precautions were taken to pre mechanical conveyance of the nickel salt, so that the effect analogous to that of the action of carbon monoxide on nickel a

PREVENTION OF SMOKE.—Successful trials were recently a steamer on the Upper Spree with a new coal briquette, the i of Herr F. Koopmann, by the use of which it is claimed no created. The boilers were first fired by means of pit coal, a volumes of smoke were emitted from the funnels. They w fired with the Koopmann briquettes, when the smoke gradu appeared, and none was seen again on the whole journey to and back to Berlin. The briquettes consist of coal combine mixture of certain mineral substances.

CREAM OF TARTAR.—So much has been written and print the purity of the various brands of cream of tartar that one is to know which may be regarded as strictly pure. To re doubt in the minds of buyers, the Union Chemical Works, have decided to furnish a certificate of analysis with every invo chased of them. This is a custom which seems to be gro America. From the average result of 28 analyses of cream from the Union Chemical Works, the amount of bitartrate o present has been found to exceed 99·8%.

BAUXITE IN GEORGIA.—Mr. G. F. Payne, state chemist of in a letter to a foreign contemporary says, that the statement Mr. W. J. A. Donald, in his recent paper on bauxite is misle to the sources of this mineral, and he gives an analysis of a sam a large tract in Georgia, which compares favourably with othe From which it will be seen that the Georgian deposits contain and iron, and more aluminium.

	Georgia Bauxite.	French.	Irish.	Arkansa
Alumina ..	58·27%	57·4%	52·37%	55·5
Silica	1·40%	2·8%	13·15%	10·1
Iron	18·05%	25·5%	1·29%	6·0
Titanic Acid	—	3·1%	5·20%	—
Water	23·02%	10·8%	27·13%	28·9
Lime	—	—	0·48%	—

SOCIETY OF CHEMICAL INDUSTRY: ANNUAL MEETIN general annual meeting of this Society will be held at Lo year, on July 20th, 21st, and 22nd. The provisional progra follows:—Wednesday, 20th, general meeting in the city in noon; president's address; smoking concert, open to mem friends (a special programme will be provided). Thursd excursion to works on the Thames below Bridge, by a special steamer, for visits to (*a*) The Linde Ice Company's Works, S (*b*) The Great Electric Lighting Station (Ferranti system), D (*c*) The Metropolitan Cold Storage and Chill Rooms, D (*d*) The Union Oil Mills, Rotherhithe; (*e*) Messrs. Easton an son's Engineering Works, Erith; (*f*) The Maximum-Nordenf and Ammunition Company, Erith. Charles Beadle, Esq., h invited members to luncheon at Erith. The steamer will time for members to dine at the "Ship," at Greenwich. O 22nd, an excursion to Windsor is being organised, two rou optional, one to visit the Castle and drive through the Home Virginia Water, or, to visit the Castle and sail up the Thames t den, the seat of the Duke of Westminster.

Market Reports.

TAR AND AMMONIA PRODUCTS.

The benzol market has a slightly healthier tone. It appears t has been paid for 90%, and to-day it would be difficult to bu price. For 50-90's there is also a better enquiry, and its valu stated as 1s. 4d. Other tar products remain *in statu quo*. Some is doing in anthracene. Several 30% B makes have been hands at 8d. to 8½d., while A quality remains as already quo

In spite of a little more activity sulphate of ammonia prices drooping, although it cannot be said that they are lower to- they were last week. Business is reported at £9. 17s. 6d. f.o and at £9 18s. 9d. at Liverpool. At the latter port, shipm tinue on a very fair scale, but while speculation is so active it i to forecast the market. At the moment Beckton sulphate is offered, while outside London makes are value for £9. Probably the nearest values at the various ports to-day are £ £9. 15s. 3d. Leith, £9. 16s. 3d. to £9. 17s. 6d. Hull, and £9 London.

THE METAL MARKETS.

NDON, WEDNESDAY.—Pig iron firm; Scotch warrants closed s. 10½d. cash. Middlesbrough 40s. cash, and Hematite ½d. cash. Copper, easier. Chili bars, G.O B.'s and G.M B.'s at £46. 17s. 6d. cash, and £47. 6s. 3d. to £47. 13s. 9d. three s. Tin firm: Straits closed at £97. 15s. to £98. cash, and os. to £97. 17s. 6d. three months. Australian, £97. 15s. cash; h ingots, £100. to £100. 10s. Lead firm: Spanish, £10. 13s. 9d. 15s. English, £10. 17s. 6d. to £11. Silesian spelter, ordinary, 7s. 6d. Quicksilver, first hands, £6. 15s. second hands, 4s. 6d. Copper shares steady: Cape, 1½ to 1⅝; Copiapo, 2½; Libiola, 2¾ to 3; Mason and Barry, 4 5/16 to 4 7/16; Rio 16⅞ to 17; Tharsis, 4¾ to 4⅞; Namaqua, 1 5/16 to 1 6/16.

LVERHAMPTON, WEDNESDAY.—Last week's slightly better as maintained to-day, and the ironworks show more activity. , however, are mostly for early delivery. Bar and sheet iron s are securing a somewhat improved home demand. Prices at £6. 15s. to £7. sheets, singles, £7 5s doubles, and 's. 6d. lattens. Hoops and strips moderate sale at £6. 12s. 6d. former and £6. for the latter. Bars, £5. 15s. to £8. Pigs a inquiry; Derbyshire, 44s. to 44s. 6d.; Lincoln, 47s. 6d; dshire best, 62s. 6d.

ASGOW, WEDNESDAY.—Market disorganised owing to calling pen contracts for Friday. Scotch done at 40s. 10½d. cash; ; with buyers at 40s. 10½d cash, sellers ask 41s. Middles- done at 40s. 6d. and 40s. cash; closing with buyers at 40s. ellers ask 40s. 1d. Hematite done at 51s. 6d., 51s. 9d., and d. cash; closing with buyers at 51s. 4½d. cash, sellers ask l.

MISCELLANEOUS CHEMICAL MARKET.

market for most articles in the chemical trade still remains in a ed condition. Things have brightened up a little during the eek, but business is far from satisfactory. Bleaching powder t £7. 10s. Caustic soda has been reduced 5s. per ton in hire. We quote:—70% white, £10. 2s. 6d.; 60%, £9; eam, £8. 15s., 10 ton lots rails Widnes, &c.; 77%, £11. 10s., Soda ash continues in good request at former prices. Soda s quiet at £3. 5s., casks or barrels, £2. 18s. bags, at makers

Chlorate of potash more plentiful, both for prompt and d; 7d. is still quoted by makers, but re-sale lots can be obtained r figures. Recovered sulphur, £5. 2s. 6d. to £5. 5s. White ed arsenic much stronger. We quote £11. 5s., Garston, for rands. Litharge moves slowly at £14. 5s. Lead salts ed. Foreign white is still nominally at £25 10s c i f.; brown, 5s.; English, £27. 10s., makers' works. Nitrate, £20. tes of soda and potash steady and without change. Bichromates erate demand. Sulphate of copper firmer at £15. 10s. f.o.b. of soda fairly brisk at 8s. to 8s. 3d. Borax (English refined) request at £29. nett. Carbolic acids still remain very quiet, siness passing is but small. Crude is quoted at higher rates, and not so much offering. Makers generally have no inclination at to sell forward at anywhere near to-day's prices. Crystals are change.

REPORT ON MANURE MATERIAL.

ness in mineral phosphate, for shipment, continues on a con- le scale, and there is still good demand for nitrate of soda on but in other articles there is not much doing, the season being arly closed.

75/80% Florida phosphate rock, for shipment, 9d. per unit c.i.f. . is now asked, but this is rather above buyers' idea of value; s probably about the mark. Hot-air dried Peace River rock is at 7½d. per unit, and 7¼d. per unit would probably now have aid for hot-air dried South Carolina River rock. There is special to note in other descriptions of mineral phosphate.

e is nothing doing in River Plate bones, recent prices accepted no inducement to shippers to sell. There are buyers at 6d. We do not hear of any business in crushed East India the nominal value must therefore be considered £4 to £4. 2s. 6d. ment. East Indian bone meal is somewhat dearer, spot price for irregular quality being advanced to £4. 2s. 6d., and for fine quality to £4. 10s., ex store. For shipment £4. 5s. per ton probably nearest value.

The market for nitrate of soda has recovered somewhat from the panic of the latter part of last week, and there are now buyers at 7s. 9d. per cwt., perhaps a fraction more, of cargoes in any position. On spot price is 8s. for ordinary quality, and 8s. 3d. for refined.

Sales of home-prepared dried blood continue to be made at 9s. 6d. per unit, free to rails at works. A parcel of rough River Plate, arrived at Liverpool, has been sold at much below this price, but exact figures not reported.

LIVERPOOL OIL AND COLOUR MARKET.

LIVERPOOL, WEDNESDAY.

OILS.—Palm oil is not so strong as last week; it is quietly firm at £19. 17s. 6d, but sales are restricted. Olive is somewhat improved, there being more business doing. Messina is quoted £34. 10s. to £35., Candia £34. per tun. Linseed continues steady, with moderate demand, at 19s. 6d. to 20s. per cwt. in export casks. Cottonseed is again weaker; Liverpool refined continues at 19s. 6d., but American declined during the week to 19s. 6d. To-day it is firmer at 19s. 9d. per cwt. Castor oil: Good seconds Calcutta is slow at 2 7/16d.; first pressure French quotations are nominal. Tallow on the whole is firm. The business during the week has been rather erratic, but prices still remain without alteration for South American, and 24s. 6d. to 25s. 9d. for North American. Resin, common, does not move off well even at 4s. 1½d. There has been a fair business passing at times, but the market is quiet. Spirits of turpentine rose to 25s. 3d. during the week, but is now steady, being in moderate request at 25s. per cwt. Petroleum: Both American and Russian refined are without change.

COLOURS without alteration. Ochres: Oxfordshire, common, £10. medium, £12., best, £15.; Derbyshire, common, 40s., medium, 50s., best, 60s. Welsh, best, 70s., seconds, 50s., and common, 18s.; Irish, Devonshire, 40s. to 45s.; French, J.C., 55s. to 60s.; M.C., 65s. to 67s. 6d. Umber: Turkish quiet. Devonshire, 50s. to 55s. White lead, red lead, and oxide of zinc unchanged. Venetian red, £6. 10s. to £10. Cobalt: Prepared oxide, 10s. 6d.; black, 9s. 9d.; blue, 6s. 6d. Zaffres: No. 1, 3s. 6d.; No. 2, 2s. 6d. Oxide of iron: common, £6.; medium, £10.; finest, £20.

THE LIVERPOOL MINERAL MARKET.

The firmness reported in our market last week has been well maintained. Manganese: Arrivals still small; stocks have been further reduced, and prices remain firm. Borate at 6¼d. per lb.; sulphate, £21. 10s.; oxalate, 1s. 6d. per lb.; chloride, £15.; carbonate, £12. 10s., steady. Magnesite: Raw lump continues quiet. Raw ground £6. 10s., and calcined £12. 10s. Bauxite (Irish Hill brand) in brisk demand; lump 20s. seconds 16s., and thirds 12s. French chalk: There are fewer arrivals to report this week; prices continue to rule steady, especially for "Angel White" brand and "Silvery," 90s. to 92s. 6d.; prime quality, 90s. to 95s.; and superfine, 105s. Barytes: Carbonate continues scarce, especially best lump, at 90s. to 95s.; nuts, 70s. to 80s.; whilst finest white sulphate is steady. "Angel White," No. 1, 70s.; No. 2, 60s. to 65s.; No. 3, 45s. Pumice stone easier. Iron ore steady; Bilbao shipments unaltered; Irish and Cumberland easy. Santander and manganiferous, there is more doing. Emerystone best brands inquired for at full prices; No. 1 lump, £5. 10s. to £6.; smalls, £5. to £5. 10s. Fullers' earth quiet; best lump, 55s.; fine impalpable ground, £7.; "Emerald" ground, 80s. Scheelite, wolfram, tungstate of soda, and tungsten metal continue firm and unaltered. Chrome ore firmer, especially for higher grades. Antimony ore and metal easy. Asbestos very firm. Potters' lead ore, smalls, £10. 10s. to £11. 10s. Calamine easy. Strontia sulphate (celestine) quiet. Limespar unchanged, especially for English manufactured; old G.G.B. brand in demand at 50s. (ground). Felspar quiet. Fluorspar: Best quality scarce. Ferro-manganese steady, 75%, £12.; 85%, £13. 15s. Plumbago brisk. Spanish, £5.; best Ceylon lump at last quotations; Italian and Bohemian, £4. to £12. per ton. "Founders," £5. to £6.; Blackwell's "Mineraline," £10. French sand, 20s. to 22s. 6d. Ground mica, £45. to £50. China clay steady; common, 18s. 6d.; good medium, 22s. 6d. to 25s.; best, 30s. to 35s. (at Runcorn). Bog ore (oxide of iron) steady; finest quality 22s. to 23s.

TYNE CHEMICAL REPORT.

TUESDAY.

Market continues steady, a fair business doing. Bleaching powder firm at £7. 10s. to £7. 12s. 6d., soft woods; sulphur unaltered at £5. 2s. 6d. to £5. 5s. nett. Bleaching powder, softs, £7. 10s. and £7. 12s. 6d. per ton, hards, £7. 17s. 6d. per ton; caustic soda, 76/77%, £11. 10s. per ton, 70%, £10. 5s. per ton; recovered sulphur, 2 cwt. bags, £5. 5s. per ton; soda ash, 48%, £5. 8s. 9d. per ton, 52%, £5. 17s. 9d. per ton, 56%, £6. 6s. 9d per ton; alkali, 36%, £4. 18s. 6d. per ton; white alkali, 48%, £6. 10s. per ton, 50% £6. 15s. 6d. per ton, 52%, £7. per ton; hyposulphite of soda, £7. per ton in 5-7 cwt. casks, £7. 15s. per ton in 1 cwt. kegs, both in 10 ton lots; silicate of soda, 75° Tw. £3. per ton, 100° Tw. £4. per ton, 140° Tw. £4. 7s. 6d. per ton; soda crystals, in casks, £2. 17s. 6d. per ton gross weight, in 2 cwt. bags, £2. 17s. 6d. per ton nett weight; chlorate of potash, 7d. per lb. less 6%; pearl hardening, £3. 10s. per ton; pure white sulphate of alumina, £4. 10s. per ton; blanc fixe, £7. 10s. per ton; chloride of barium, £7. 10s. per ton; nitrate of baryta crystals, £19. per ton; nitrate of baryta, ground, £19. 10s. per ton; sulphide of barium, £7. per ton; carbonate of alumina, £28. 10s. per ton; aluminate of soda, £33. 10s. per ton; hydrate of barium, £11. per ton.

South Durham salt firm at 10s. 6d. to 11s. per ton nett f.o.b. Tees.

Coals: There is little alteration in the price of Northumbrian coals. Best steam is quoted at 11s. 6d. to 12s. per ton, small steam is quoted at 7s. 6d. to 8s. per ton. Coke 22s. to 24s. per ton f.o.b.

Durham strike: Matters are again at a deadlock, the men being now willing to go in at a reduction of 10 per cent., while the coal owners refuse to reopen the pits unless at a reduction of 13½ per cent.

The distress amongst the mining population of Durham is becoming most acute, and there can be little doubt, that, in the end, the men will be compelled to return to work upon the masters' terms.

WEST OF SCOTLAND CHEMICALS.

GLASGOW, TUESDAY.

Regarding the new arrangement for the sale of bichromate of potash and bichromate of soda, to which both German and Scotch makers are parties, it has to be noted that the price for export is a farthing lower than the home figure, terms nett f.o.b. Glasgow, but that the minimum for one transaction for shipment is 5 tons. Since the rise there has been very little dealing.

The general market is still very quiet, although bleach and sulphate of copper are both firmer. Soda crystals, nitrate of soda, and caustic soda, on the other hand are easier. The others are unchanged.

Sulphate of ammonia has made a further descent, there having been at least one sale by a maker, for Glasgow shipment, at a rate equivalent to £9. 18s. 9d. f.o.b. Leith. Second hand holders have in several cases parted at that, which is probably the lowest yet done here, although this is not quite certain.

Paraffins are all still very flat, and the case of scale very pressing, no sales having been made for some considerable time, and stocks therefore getting cumbersome. Two more of the companies announce heavy loss, but another (the Pumpherston Company) has made a good balancing and will pay 10 per cent. to ordinary shareholders. In this case something was looked for, but not so much.

Chief prices current are:—Soda crystals, £2. 17s. 6d., nett Tyne; alum in lump, £5. 10s., nett Glasgow; soda ash, 1⅜d., less 2½%, Tyne; caustic soda, white, 74°, £11. 10s., 70/72°, £10. 5s., 60/62°, £9. 5s. and cream, 60/62°, £9. all nett Liverpool; bicarbonate of soda, 5 cwt. casks, £6. 15s., and 1 cwt. casks, £7. nett Liverpool; refined alkali, 1⅝d., less 2½% Tyne; bleaching powder, £7. 10s. to £7. 12s. 6d. nett Tyne; saltcake, 36s. 6d.; borax, English refined, £29., and boracic acid, £37. 10s., nett Glasgow; bichromate of potash, 4½d. nett, for Scotch and English deliveries (for export 4¼d. nett f.o.b. Glasgow); bichromate of soda, 3¾d., nett, for Scotch and English deliveries (for export 3½d. nett f.o.b. Glasgow); chlorate of potash, 6¾d., less 5% any port; nitrate of soda, 8s. to 8s. 3d.; sulphate of ammonia, £9. 18s. 9d. to £10. f.o.b. Leith; salammoniac, first and second white, £35. and £33., less 2½% any port; sulphate of copper, £15. 10s., less 5% Liverpool; paraffin scale (hard), 2 15/16d., and soft 2 13/16d. to 3d. per lb.; paraffin wax, 120°, semi-refined, 3⅜d. to 4d.; paraffin spirit (naphtha), 6d. a gallon; paraffin oil (burning) 5d., 5¼d. and 5½d. according to kind, at works, for Scotch buyers (English sales about 1d. lower); ditto (lubricating), 865°, £3. 10s. to £4., 885°, £5. 5s. to £7., and 890/895°, £6. to £8. Week's imports of raw sugar at Greenock, 35,298 bags.

New Companies.

CWMMYNACH MANGANESE SYNDICATE, LIMITED.—This company was regis on the 12th inst, with a capital of £5,000., in £1. shares, to dig, sink, tunnel, se for, and raise mineral ores, manganese, lead, calamine, etc., in and upon the known as Cwmmynach-issa, situated in the parish of Llanaber, Merionethshire,

HORROCKSFORD LIME CO., LIMITED.—This company was registered on the inst., with a capital of £8,000., in £5. shares, to acquire and carry on the busine lime burner, stone merchant, cement manufacturer, etc., carried on by H. Park at Horrocksford, near Clitheroe, Lancashire, and with a view thereto to ado agreement dated May 16, 1892, between Mr. Henry and Mrs. Parkinson of the part and Mr. F. W. Briscoe (for the company) of the other part. The subscr are:—

	Shar
H. Parkinson, 24, King-street, Clitheroe, contractor	
Mrs. H. Parkinson, 24, King-street, Clitheroe	
F. W. Briscoe, 11, Chancery-lane, Bolton, accountant	
J. Dean, Eanam Wharf, Blackburn, slate and coal merchant	
T. Dean, Eanam Wharf, Blackburn, slate and coal merchant	
J. Dickinson, Bank-street, Bolton, contractor	
J. R. Vose, 43, Blackburn-road, Bolton, accountant	

JOYMOUNT BLEACHING, DYEING, AND PRINTING CO., LIMITED.—This com was registered on the 16th inst., and consists of 18 members, each of whom i event of winding up is liable for £1. The objects are to carry on the busine bleachers, dyers, printers, and finishers of cotton, woollen, silk, and other fabrics to enter into two agreements, (1) with Messrs. A. H. Ryecroft and Swindells, and Co, Ltd., and (2) with Mr. A. H. Ryecroft.

NEW LIMEHURST COLLIERY CO., LIMITED.—This company was registered o 12th inst., with a capital of £20,000., in £5. shares, to acquire and carry o business of colliery proprietors lately carried on by Messrs. J. F. and A. Bu and the Limehurst Coal Co., Limited, at the Limehurst Colliery, Ashton-under- and, with a view thereto, to adopt an agreement dated March 14, 1892, betwee aforesaid parties on the one part, and Mr. J. Hilton (for the company) on the part. The subscribers are:—

	Shar
O. Hughes, Limehurst, Ashton-under-Lyne	
H. Shaw, Stamford House, Ashton-under-Lyne	
J. King, 68, Blandford-street, Ashton-under-Lyne, salesman	
J. O. Lupton, Richmond House, Ashton-under-Lyne	
T. Cooke, Old Lynne, Ashton-under-Lyne	
J. C. M. Turner, Stamford-street, Ashton-under-Lyne, valuer	
J. W. Pollitt, Guide Bridge, carrier	
A. E. Mellor, Mossley-road, Ashton-under-Lyne, spinner	

Gazette Notices.

PARTNERSHIPS DISSOLVED.

S. PARTRIDGE AND S. SMART under the style of Partridge and Guest, Ro Regis, brick and tile manufacturers.

A. E. POLLEY AND J. HAYLER under the style of Polley and Co., Hove, oil colour men.

MESSRS. TAYLOR AND HARRISON, Bradford, Yorks. wool and oil merchants.

BANKRUPTCY ACTS, 1883 and 1890.

Receiving Order.

NICHOLSON, ISAAC (formerly trading as Isaac Nicholson and Co.), Liversedge, b keeper, formerly chemical manufacturer and drysalter.

Adjudication.

NICHOLSON, ISAAC (formerly trading as Isaac Nicholson and Co.), Liversedge, ba keeper, formerly chemical manufacturer and drysalter.

Order made on Application for Discharge.

MILNS, A. E., Fenchurch-street, E.C., Sugar House-lane, and residing at Woodfo paint, colour, and varnish manufacturer– discharge suspended for two years.

The Patent List.

This list is compiled from Official sources in the Manchester Techni Laboratory, under the immediate supervision of George E. Davis a Alfred R. Davis, who report professionally upon the value of Chemi Patents.

APPLICATIONS FOR LETTERS PATENT.

Improvements in Destructor Furnaces. P. Hart and H. Royle. 8,723. M
Air Purifier and Disinfectant. C. F. Hirons. 8,725. May 9.
Supplying Air to Furnaces, etc. S. Oates. 8,763. May 9.
Filters. T. McKay. 8,764. May 9.
Filtering Saccharine and other Liquors. G. F. Redfern. 8,773. May 9.
Cement Grinding Apparatus. C. W. Brittain. 8,777. May 9.
Smoke Consumption. H. H. Mayor. 8,806. May 10.
Purifying Water for Technical and other Purposes. W. P. Thomp 8,833. May 10.
Manufacture of Fertilizers. T. M. Smith. 8,859. May 10.
Manufacture of Glass. V. B. Lewes. 8,865. May 10.
Utilization of Tin Scrap, Slag, etc. T. Twynam. 8,887. May 11.
Purifying Carbonic Acid. B. E. R. Newlands. 8,890. May 11.

Rosin Oil—
France, 200 brls. A. Brown & Co.
Saltpetre—
E. I., 1,704 bgs. C. Wimble & Co.
Pisagua, 14,173 W. Montgomery & Co.
Germany, 220 cks. P. Hecker & Co.
" 43 P. W. Hore & Co.
Silica—
Adelaide, £47 Horne & Co.
Sodium Acetate—
France, 19 pkgs. F. Smith
" 18 S. F. Waters & Co.
Sodium Silicate—
Holland, 25 pkgs. Spies, Bros. & Co.
Stearine—
France, 300 bgs. Beresford & Co.
" 85 G. Boor & Co.
Germany, 50 Ellis, Kislingbury & Co.
Sulphur—
Italy, 2½ t. A. Hughes
" 200 Brandram, Bros. & Co.
" 5 W. J. Crook
" 300 W. C. Bacon & Co.
" 15 G. Boor & Co.
Talc—
Italy, £80 Davies, Turner & Co.
" 20 W. J. Davies & Sons
Tallow—
France, 4 cks. Mory & Co.
Germany, 58 C. B. Leighton
Queensland, 23 Leach & Co.
" 32 Coml. Bkg. Co. of Sydney
N. Zealand, 172 Nelson Bros.
France, 36 Lucas & Spencer's Wf. Co.
Queensland, 439 Goad, Rigg & Co.
" 406 Goldsbrough, Mort & Co.
N. Zealand, 36 N. Z. L. & M. A. Co.
" 38 Hicks, Nash & Co.
" 6 Dalgety & Co., Ltd.
Jersey, 2 Goad, Rigg & Co.
Tar—
Belgium, 5 brls. Sawer, Mead & Co.
Tartaric Acid—
Holland, 4 pkgs. Middleton & Co.
" 12 W. C. Bacon & Co.
France, 11 B. & F. Wf. Co., Ltd.
Spain, 6 W. C. Bacon & Co.
Ultramarine—
Germany, 6 cs. J. Kitchin, Ltd.
Holland, 4 Haeffner, Hilpert & Co.
Germany, 32 cks. T. Hamilton
Holland, 4 brls. Little & Johnson
Varnish—
U. S., 10 pkgs. Pinchin, Johnson & Co.
Belgium, 6 J. Watt & Son
" 6 Stobbs, Wilson & Co.
Verdigris—
France, 1 pkg. Hodgkinsons & Co.
White Lead—
Holland, 119 cks. Phillipps & Graves
Germany, 38 Randall Bros.
Belgium, 2 brls. J. L. Lyon & Co.
Germany, 5 cks. Petri Bros.
" 64 Magee, Taylor & Co.
" 34 M. Ashby, Ltd.
France, 18 J. Watt & Son
Holland, 13 Spies, Bros & Co.
France, 45 W. Harrison & Co.
Belgium, 44 brls. T. & W. Farmiloe
Zinc Oxide—
Holland, 25 cks. Burrell & Co.
" 150 325 brls. M. Ashby, Ltd.
Germany, 19 Beresford & Co.

LIVERPOOL.

Week ending May 12th.

Acetic Acid—
Rotterdam, 10 cks.
Ammonia—
Havre, 1 cs. Cunard S.S. Co., Ltd.
Antimony—
Constantinople, 213 bgs. Rene & Baudony
Volo, 134 G. G. Blackwell
Barytes—
Hamburg, 3 cks.
Rotterdam, 13
Antwerp, 40 brls.
Borate of Manganese—
Hamburg, 1 ck.
Caoutchouc—
Alexandria, 1 cs.
Ceresin—
Hamburg, 5 cs. 40 brls.
Chemicals (*otherwise undescribed*)
Rotterdam, 2 cks.
Colours—
In transit, 1 cs.
Rotterdam, 18 cks.
Ghent, 10 brls. J. T. Fletcher & Co.
Cream of Tartar—
Barcelona, 5 cks. Bedall, Adams, & Co.
Tarragona, 5 Sasche & Klemm
Rotterdam, 2
Dyestuffs—
Algorobilla
Valparaiso, 350 bgs.
Cutch
Rangoon, 3,600 bxs.
Divi Divi
Savanilla, 358 sks. 7 bgs.
Extracts
Bordeaux, 25 cks.
Ghent, 100
Fustic
Carthagena, 576 ps. Widow, Duranty & Son
" 1,504 A. Dobell & Co.
Madder
Marseilles, 1 ck.
Myrabolams
Calcutta, 359 bgs. 2,000 pkts.
Turmeric
Bombay, 207 bgs. D. Sassoon & Co.
" 257
Valonia
Gythion, 129 t.
Farina—
Hamburg, 55 bgs.
Glucose—
New York, 500 brls.
Glycerine—
St. Nazaire, 40 cks.
Marseilles, 2 dms. R. J. Francis & Co.
" 7 brls.
Guano—
Rotterdam, 80 bgs.
Manganese—
Hamburg, 1 ck.
Gothenburg, 9 t. Dunford & Elliott
" 100 Macqueen Bros.
Manure—
Bordeaux, 16 bgs.
Nitrate—
Rotterdam, 67 bgs.
Ochre—
Marseilles, 24 brls. Clay & Bennett
" 29 J. S. Cordwell & Co.
Oxalic Acid—
Rotterdam, 17 cks.
Phosphate—
Antwerp, 200 t. T. Vickers & Son
Ghent, 500 bgs.
Potash—
Hamburg, 7 brls. 10 cks.
Potassium Chlorate—
Hamburg, 93 bgs.
Saltpetre—
Calcutta, 2,147 bgs.
Hamburg, 7 cks. 100 brls. 150 kgs.
Soap—
Boston, 3 cs. J. Thompson
New York, 1 W. Cuthbertson
Rotterdam, 2 cks.
Sodium Nitrate—
Rotterdam, 5 cks.
Sodium Sulphate—
Rotterdam, 2 cks.
Sulphur—
Huelva, 1,121 t. Matheson & Co.
Tallow—
Boston, 160 hds. 200 brls.
Baltimore, 125 100 tcs.
Philadelphia, 25
Las Palmas, 274 cs.
Tartar—
Bordeaux, 23 cks.
Tartaric Acid—
Marseilles, 18 cks.
Bordeaux, 8
Rotterdam, 6 10 kgs.
Tincal—
Calcutta, 225 bgs.
Ultramarine—
Hamburg, 5 cs.
Rotterdam, 27
Varnish—
Hamburg, 3 cs.
Boston, 5 brls. 11 bxs. 190 kgs. Staynes & Smith
Verdigris—
Bordeaux, 5 cks.
Marseilles, 1 brl. Clay, Dod, & Co.
Waste Salt—
Hamburg, 41 bgs.
White Lead—
Rotterdam, 51 cks.
Ghent, 12
Zinc Ashes—
New York, 32 pkgs. R. Crooks & Co.
B. Ayres, 599 brls. J. Lysaght & Co.
Zinc Oxide—
Antwerp, 235 brls.
Rotterdam, 25 cks.
Antwerp, 110 J. T. Fletcher & Co.

GLASGOW.

Week ending May 19th.

Alum—
Rotterdam, 16 cks. G. & J. Royd
Asbestos—
Rotterdam, 40 bgs. J. Rankine & Son
Barytes—
Rotterdam, 19 cks. J. Rankine & Son
" 137
Colours—
Rotterdam, 30 cks. G. & J. Boyd
" 18 bls. 5 bxs. 3 css. J. Rankine & Son
Cream of Tartar—
Rotterdam, 11 cks. J. Rankine & Son
Dyestuffs—
Alizarine
Rotterdam, 58 cks. 1 cs. J. Rankine & Son
Aniline
Rotterdam, 5 cs. J. Rankine & Son
Aniline Colours
Rotterdam, 2 cks.
Extracts
New York, 50 cs.
Madder
Rotterdam, 9 cks. 1 bx. J. Rankine & Son
Sumac
New York, 16 bgs.
Glucose—
New York, 633 brls.
Glycerine—
Rotterdam, 7 dms. 5 t. 7 css J. Rankine & Son
Ochre—
Rouen, 44 cks.
Paint—
New York, 12 css.
Potash—
Quebec, 10 brls.
Pyrites—
Huelva, 1,753 t. Tharsis Co., Ld.
Rosin—
New York, 100 brls.
Baltimore, 300
Sulphur—
Seville, 830 t. Seville Sulphur & Copper Ore Co.
Tallow—
New York, 111 tcs. 110 hds.
Newport News, 271 tcs. C. Tennant & Co.
Baltimore, 200 brls.
Tartar—
Bordeaux, 2 cks.
Varnish—
New York, 50 brls.
Waste Salt—
Hamburg, quantity
White Lead—
Rotterdam, 11 cks. J. Rankine & Son
" 167
Zinc White—
Rotterdam, 50 cks. J. Rankine & Son

HULL.

Week ending May 14th.

Acids—
Rotterdam, 2 cks. G. Lawson & Sons
Barytes—
Antwerp, 67 cks. Bailey & L
Bremen, 24 Veltmann
" 73
Rotterdam, 6 Hutchinson
Antwerp, 21
Borax—
Rouen, 1 cs.
Caoutchouc—
Hamburg, 1 cs. C. M. Lofthouse
Ceresine—
Stettin, 15 bgs. Wilson, Sons,
Chemicals (*otherwise undesc*
Naples, 3 cks.
Rotterdam, 1 cs. W. & C. L. R
Copenhagen, 1 pkge. Wilson, S C
Bremen, 4 cs. 12 kgs. Valtm
Hamburg, 35 cks. Wilson, S C
Antwerp, 20 pks. "
Dunkirk, 10 cks. "
Colours—
Rotterdam, 3 pks. 2 cks. G. L
Hamburg, 1 cs. Hanger, Wat
Antwerp, 6 G. Lawson
Stettin, 30 cks. Wilson, Sons,
Rotterdam, 38 4 cs 93 pks. W L. R
Flushing, 54 6 2 brls. Z S.
Rotterdam, 60 Hutchinson
Cream of Tartar—
Rotterdam, 4 cks. W. & C. L. R
Dyestuffs—
Alizarine
Rotterdam, 2 cs. 54 cks. 53 pks. C. L. R
" 60 cks. Hutchinson
Myrabolams
Bombay, 10,935 bgs. 2,000 pkts.
Farina—
Harlingen, 250 bgs.
Ghent, 124 bxs. Wilson, Sons
Stettin, 50 bgs. "
Glucose—
New York, 350 brls.
Glycerine—
Hamburg, 20 dms.
Amsterdam, 8 pks.
Lead Acetate—
Hamburg, 15 cks. Sissons Bro
Manure—
Rotterdam, 10 bgs. G. Lawson
Ochre—
Marseilles, 22 cks.
Rouen, 62 T. F. Hewit
" 5 J. W
Paint—
Boston, 8 cs. Wilson, Sons,
Hamburg, 19 pks. G. D. Webster
Plumbago—
Hamburg, 17 cks. G. Buckton
Saltpetre—
Hamburg, 10 kgs. C. M. Lofth
Antwerp, 170 bgs. Wilson, S C
Salts—
Rotterdam, 27 cks. G. Lawson
Sodium Nitrate—
Dunkirk, 783 bgs.
Stearine—
Rotterdam, 40 bgs. Wilson, Sons,
Antwerp, 46 cks. "
Tallow—
Boston, 80 cks. Wilson, Sons
New York, 870 pks. "
Tar—
Marseilles, 22 cks. Wilson, Sons
Konigsberg, 25 brls.
Tartaric Acid—
Rotterdam, 3 cks. W. & C. L. R
Ultramarine—
Rotterdam, 13 cs. G. Lawson
" 8 cks. Hutchinson
Varnish—
Rotterdam, 8 cks. W. & C. L. R

Salt—
E, 50 t. 102 bgs. G. Lawson & Sons
1,658
491 Furley & Co.
Lead—
, 33 cks. Bailey & Leetham
am, 26 A. Sanderson & Co.
Oxide—
am, 10 cks.

TYNE.

Week ending May 14th.

Clay—
rg, 481 cs. Tyne Steam Shipping Co.
Soda—
am, 8 cks. Tyne Steam Shipping Co.
—
rg, 1 ck. Tyne Steam Shipping Co.
Potash—
Hamburg, cks. Tyne Steam Shipping Co.
Salt—
Hamburg, 110 t. Clephens & Wiencke
Sulphur—
Pomaron, 1,003 t. A. P. Harrison & Co.
Huelva, 1,504 Scott Bros.
Ultramarine—
Rotterdam, 1 ck. Tyne Steam Shipping Co.
Waste Salt—
Hamburg, 600 t.

GOOLE.

Week ending May 4th.

Antimony—
Boulogne, 2 cks.
Caoutchouc—
Boulogne, 5 cks.
Dyestuffs *(otherwise undescribed)*
Boulogne, 44 cks. 26 cs. 15 pkgs.
Dyestuffs—
Alizarine
Rotterdam, 58 pkgs. 25 brls.
Farina—
Hamburg, 450 bgs.
Delfszyhl, 450
Glucose—
Calais, 180 bgs.
Hamburg, 28 cks.
Glycerine—
Rotterdam, 10 cs.
Hamburg, 4 cs. 4 dms.
Phosphate—
Ghent, 816 bgs.
Potash—
Rotterdam, 10 cks.
Calais, 65 drs.
Dunkirk, 54 31
Hamburg, 10
Saltpetre—
Antwerp, 135 bgs.
Waste Salt—
Hamburg, 430 cks. 170 t.
Zinc Oxide—
Antwerp, 10 brls.

GRIMSBY.

Week ending May 7th.

Acid—
Antwerp, 9 cs.
Chemicals *(otherwise undescribed)*
Antwerp, 17 pkgs.
Hamburg, 25
Farina—
Hamburg, 100 bgs.
Zinc Ashes—
Antwerp, 16 pkgs.

EXPORTS OF CHEMICAL PRODUCTS

OF

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending May 18th.

Acid—
10, 3 cs. £26
-
', 5 kgs. £13
on, 10 pkgs. 18
ar, 30 cs. 22
wn, 30 24
10, 32 83
—
5 t. 3 c. 37
lia—
Video, 5 cs. £15
Kong, 10 22
es, 20 36
nium Carbonate—
ne, 3 cs. £11
2 t. 10 c. 67
on, 15 21
ux, 1 5 10 cks. 75
rk, 18 25
nium Chloride—
a, 3 t. 17 c. £125
1 10 50
rdam, 6 10
ls, 10 12
e, 6 cks. 39
res, 1 10 56
nium Nitrate—
Bay, 2 t. 12 c. £159
nium Sulphate—
rdam, 40 t. 12 c. £440
rara, 49 17 558
lad, 20 4 238
baya, 1000 10,500
rang, 423 7 4,245
ic—
ay, 20 kgs. £14
m Nitrate—
York, 3 t. £60
es Sulphate—
orn, 20 cks. £78
:—
ghai, 2 kgs. £4
nhagen, 18 47
n, 8 pkgs. 16
burg, 1 t. 3 c. 58
im Phosphide—
eaux, 1 cs. £11
lic Acid—
a Bay, 2 c. £21
town, 34 drs. 10
, 24 cks. 68
ort, 25 41
more, 6 cs. 24
Amboy, 7,000 brls. 2,887
ic Soda—
town, 8 c. £14
ourne, 1 t. 7 37
Algoa Bay, 10 14
Port Elizabeth, 1 6 14
Calcutta, 15 17
Lisbon, 1 16 25
E. London, 4 7
Rio de Janeiro, 10 3 125
Natal, 10 11
Nelson, 2 4 22
Chemicals *(otherwise undescribed)*
Adelaide, 21 pkgs. £112
Algoa Bay, 1 cs. 19
Capetown, 5 23
New York, 4 t. 8 c. 810
Adelaide, 71 pkgs. 180
Chloride of Lime—
Capetown, 11 c. £13
Citric Acid—
Shanghai, 1 cs. £6
Bombay, 2 8
Cadiz, 5 cwt. 42
Hamburg, 1 t. 10 c. 241
Odessa, 1 8
Genoa, 2 6 pkgs. 119
Amsterdam, 6 kgs. 49
Antwerp, 1 158
St. Petersburg, 1 10 10 cks. 616
Coal Products—
Aniline Oil
Rotterdam, 24 drs. £880
Anthracene
Rotterdam, 31 cks. £123
Dusseldorf, 108 609
Benzol
Treport, 12 cks. £154
Rotterdam, 20 18 drs. 524
Calais, 10 106
Coal Tar Dyes
Boston, 8 cks. 241
Amsterdam, 1 12
Yokohama, 10 cs. 140
Creosote
Boulogne, 4 pkgs. £49
Creosote Salts
Antwerp, 1,236 bgs. £157
Naphtha
Calais, 26 brls. £60
Copenhagen, 16 drs. 12
Napthalene
Danzig, 61 cks. £84
Hamburg, 112 pkgs. 56
Amsterdam, 40 cks. 59
N. York, 8 cs. 29
Genoa, 10 cks. 16
Antwerp, 10 16
Treport, 48 pkgs. 43
Paraffin Wax
Hobart, 30 cs. £101
Pitch
Catania, 50 brls. £15
Dunkirk, 1,757 t. 2,636
N. York, 800 cks. 398
Bombay, 10 brls. 13
Cette, 1,260 t. 2,520
Abo, 99 168
Christiania, 100 fkns. 15
Antwerp, 352 t. 595
Constantinople, 150 brls. 60
Sydney, 264 pkgs. 65
Tar
Abo, 472 brls. £225
Stettin, 250 123
Sulina, 50 cks. 30
Ibrail, 30 18
Stockholm, 100 rnlts. 73
Bombay, 10 11
Tar Oil
Marseilles, 150 brls. £42
Gothenburg, 100 rnlts. 70
Paris, 27 cks. 100
Toluol
Rotterdam, 9 drs. £75
Copper Sulphate—
Barbadoes, 5 t. £80
Lisbon, 5 2 c. 70
Marseilles, 5 75
Tobago, 2 6 33
Amiens, 5 2 90
Amsterdam, 4 19 80
Cream of Tartar—
Sydney, 2 t. 5 c. £199
Disinfectants—
Calcutta, 40 pks. £24
Falmouth, 10 drs. 10
Sydney, 150 42
Gibraltar, 2 pkgs. 13
Halifax, 6 18
Glycerine—
Cape Town, 1 cs. £5
B. Ayres, 2 19
Shanghai, 4 c. 10
Boston, 3 cs. 10
Hydrochloric Acid—
Shanghai, 2 cks. £5
Rio de Janeiro 15
Manure—
Guadeloupe, 73 t. 18 c. £960
Martinique, 111 1,110
St. Kitts, 39 395
St. Lucia, 79 918
St. Vincent, 50 500
Demerara, 40 400
Herbert River, 15 250
Trinidad, 59 19 386
Mauritius, 10 125
Gothenburg, 19 10 52
Hamburg, 50 525
Antigua, 30 300
Tamarang, 100 1,050
Sourabaya, 125 1,062
Rotterdam, 8 64
Maderia, 19 14 180
Jersey, 4 30
Natal, 10 128
Treport, 19 19 126
Riga, 97 18 350
Nitric Acid—
Rio de Janeiro, £60
Phosphorus—
Lisbon, 3 cs. £36
Potash—
Bombay, 10 cs. £50
Potassium Carbonate—
E. London, 6 c. £7
Potassium Chlorate—
Boston, 10 t. £595
Malta, 12 cks. 35
Potassium Cyanide—
Shanghai, 3 cs. 5 cks. £45
Yokohama, 5 26
Potassium Prussiate—
Bombay, 5 c. £27
Lisbon, 4 19
Saltpetre—
Pernambuco, 4 t. 11 c. £102
Rio Grande do Sul, 17 20
Lisbon, 2 4 44
Gibraltar, 10 220
Rio de Janeiro, 26 10 596
Natal, 10 11
Salts of Potash—
Natal, 40 t. £5,636
Salts of Soda & Lime—
Montreal, 10 cs. 10 cks. £227
Sanitas—
Zanzibar, 13 pkgs. £20
Sheep Dip—
Capetown, 37 dms. £11
E. London, 900 191
Algoa Bay, 370 100
Calcutta, 182 pkgs. 45
Boca, 230 200
Durban, 10 cs. 30
Sydney, 20 drs. 20
Natal, 700 32 cs. 259
Soda—
Hambro, 1 t. £4
Soda Crystals—
Nelson, 4 t. 19 c. £17
Kurrachee, 2 5 8
Newcastle. 15 54
Sodium Tartrate—
B. Ayres, 2 cks. £8
Strontium Nitrate—
New York, 16 5 c. £459
Sulphur—
Lisbon, 25 cks. £211
Calcutta, 25 t. 18 c. 175
Fremantle, 5 38
Sulphuric Acid—
Trinidad, 2 t. 8 c. £9
Zanzibar, 10 cs. 24
Superphosphate—
Trinidad, 14 t. 16 c. £48
Cherburg, 130 390
Huelva, 48 2 238
Timaru, 297 6 985
Tartaric Acid—
Natal, 3 c. £18
Nelson, 3 15
Sydney, 10 kgs. 55
B. Ayres, 19 cks. 265
Algoa Bay, 3 kgs. 16
Cologne, 5 cwt. 42

LIVERPOOL.

Week ending May 18th.

Alum—

Seville,	3 t.	2 c.		£14
Adelaide,		15		5
Valencia,	2	1	2 q.	11

Alum Cake—

Calcutta,	13 t	10 c.	6 q.	£41
Montreal,	1	10		9

Ammonium Carbonate—

Rotterdam,		4 c.		£7
B. Ayres,	2 t.	15	1 q.	62
Copenhagen,	1	2		36
Venice,		6	3	8
Toronto,	1			28

Ammonium Chloride—

Philadelphia,	15 t.	10 c.	4 q.	£358
Piræus,		12		21
Constantinople,	1			33
Alexandria,	5	1	3	165
Montreal,		19	2	20
Trieste,	1	2	1	37

Ammonium Sulphate—

Valencia,	8 t.	4 c.		£86
Arucas,	5	1		55
TonnayCharente,	50	8	3 q.	507
Souerabaya,	20	15	1	207
New York,	102	3	3	1,050
Genoa,	16	7	1	163
Barbadoes,	40	11	2	442

Bisulphide of Carbon—

Para,		4 c.		£5

Bleaching Powder—

Antwerp,	28 cks.			
Bilbao,	547	60 kgs.		
Boston,			150 brls.	
Genoa,	24			
Ghent,	68			
Havana,	29 cs.			
Ibrail,	4			
Leghorn,	30			
Lisbon,	20			
Montreal,	55			
Naples,	12			
New York,	671		135	35 pkgs.
Seattle,	70			
Philadelphia,	147			
Valparaiso,	25			
Vigo,	4			

Boracic Acid—

Havre,	1 t.	1 c.		£42
Antwerp,	1	3	1 q	44
Yokohama,	20 cs.			38

Borax—

Adelaide,	5 cks.			
Alexandria,		7 brls.		
Antwerp,	10			
Melbourne,	20			
Rotterdam,	6			
Stockholm,	11			
B. Ayres,	1 c.			£5

Calcined Magnesia—

Constantinople,	22 lbs.			£25

Calcium Chloride—

Boston,	1 t.	5 c.		£2

Carbolic Acid—

Marseilles,	1 t.	9 c.	1 q.	£58
Hiogo,		9	1	19
New York,	3	2	2	94
Hamburg,		5	3	16
Rotterdam,	3	18	3	200
Colombo,		10		6
Montreal,	1	3		17

Caustic Soda—

Adelaide,	67 dms.			
Amsterdam,	76			
Barcelona,	370	133 cks.		
Boston,	235			
Carthagena, S.,	80		45 brls.	
Catania,	43			
Dunedin,	5			
East St. Louis,	50			
Genoa,	222			
Hamburg,	7			
Hiogo,	200			
Ibrail,	30			
Lisbon,	95			
Madrid,	35			
Malaga,	130		2	
Monterey,	200			
M. Video,	150			
Montreal,	252			
New Orleans,	100			
New York,	615		145	pgs.
Oporto,	6			
Palermo,	10			
Para,	7			
Pasages,			12	
Pernambuco,	140			
Rio Grande,	180			
Rotterdam,			2	
St. John's, Nfld.,				6
San Francisco,	50			
Seville,	43			
Shanghai,	4			
Stockolm,	10			
Sydney,	45			
Bilbao,	50			
Cape Town,	6			
Corfu,	40			
Honolulu,	30			
Malta,	11			
Manilla,	150			
Messina,	18			
Naples,	5			
Odessa,	82			
Philadelphia,	50			
Progresso,	30			
Puerto Cabello,	8			
Rouen	35			

Chemicals *(otherwise undescribed)*

Odessa,		11 c.	1 q.	£350
Antwerp,		10		17
Philadelphia,	10 cks.			56
Beyrout,		9		14

Citrate of Magnesia—

M. Video,	4 cks.			

Copperas—

Varna,	3 t.	6 c.		£7
Montreal,	2	3	3	5
Constantinople,	3	14		7

Copper Sulphate—

Algiers,	2 t.	1 c.		£30
St. John's, Nfld.,	3	19	2 q.	63
Marseilles,	220	8	2	3,420
Barcelona,	15	1		210
Tarragona,	40	19	7	609
Brindisi,	3			45
Monte Video,	4	10	3	67
Singapore,	2	18		44
Venice,	10	2	3	150
Shanghai,	1	10		24
Antwerp,	11		5	166
Ghent,	26	10	5	396
La Union,	2			45
Lisbon,		19	1	15
Alexandria,	3	3		58
Naples,	2	9	3	37
Nantes,	5	3		78
Genoa,	4	18		73
Bordeaux,	109	17	8	1,689

Cream of Tartar—

Belize,	1 cs.			£8
Savanilla,	4			24

Guano—

Barcelona,	73 t.	16 c.		£720

Glycerine—

Savanilla,		3 c.		£10

Gypsum—

Montreal,	20 t.	17 c.	2 q.	£40
New York,	70	10		250
Calcutta,		17		9

Iron Chloride—

Bordeaux,	10 t.	2 c.		£33

Lead Acetate—

Messina,	1 t.	4 c.		£20

Magnesia—

Vera Cruz,	2 cs.			
Barcelona,	16			
Tarragona,	10			

Magnesium Carbonate—

Cienfuegos,		6 c.	2 q.	£16

Manganese Sulphate—

Seville,	9 t.	11 c.	2 q.	£120
Philadelphia,	8 cks.			

Manure—

Tarragona,	20 t.			£150
Valencia,	160	11 c.	1 q.	408
Gd. Canary,	2			6

Metallic Sodium—

Rotterdam,	20 cs.			

Nitric Acid—

New Orleans,		11 c.		£9

Ochre—

Coquimbo,	10 brls.			

Paint—

Antwerp,	8 kgs.			
Bahia Blanca,	4			
Brass,	10			
Calcutta,	1 cs.	170	29 dms.	
Callao,	10			
Capetown,		12		
Carthagena, U.S.C.,			40 kgs.	
Cavitte,		10		
Colon,	12 cs.	16 cks.		
Dunkirk,			9	
Ibrail,	8		32	pkgs.
Iquique,	82			
Kingston, Ja.,			115	
Landana,	5			
Lisbon,	5 cs.	9		
Loanda,			60	
Malta,			173	
Manaos,			31	
Melbourne,	16	40		
Montreal,			17	
Nassau,			87	
New Orleans,		40		
New York,	7	52	100	3
Old Calabar,	4	21		
Pernambuco,			3	brls.
Piræus,	2		3	
St. Domingo,	1			
San Francisco,		50		
Santander,	20			
Savanilla,	17 cs.			
Valparaiso,	3	48	50	bgs.
Accra,	5			
Bonavista,	2			
Corfu,	5			
Hamburg,		27		
Havana,		25		
Kings Cove,	2			
Kingston, O.,			50	pkgs.
Manilla,	12			
M. Video,			12	brls.
Pelotas,		5		
Rio de Janeiro,	4			
St. John's, Nfld.,	8	325	50	
Salaora,	2 cs.	14		
Salonica,		90		
Stratford,	9 bgs.		9	

Painters' Colours—

Alexandria,			10	
Antofagasta,	29		4	pkgs.
Arica,	12			
Bahia,	25			
Baltimore,	203	10		
Belize,	3	10	61	
St. John's, Nfld.,	6			
San Juan,			3	brls.
Bombay,	82 cs.	190		
B. Ayres,	150 t.	210	101	
Para,	1	33	8	
Patras,			3	
Pernambuco,	3			
San Francisco,	83			

Phosphorus—

Vera Cruz,	1,100 lbs.			£110
Hiogo,	9 c.			98
Shanghai,	6 cs.			60

Pitch—

Cavite,	25 brls.			
Cette,	1,020 t.			

Potassium Bichromate—

Seville,		7 c.	3 q.	£13

Potassium Carbonate—

Calcutta,	1 t.	1 c.		£20

Potassium Chlorate—

San Francisco,		15 c.		£40
Philadelphia,	2 t.	10		118
Rotterdam,	2	5		119
Corunna,		10		33
Boston,	2	10		118
Antwerp,	4			212
Naples,	1			47
Oporto,	3	10		171
Sydney,	2	10		114
Genoa,	1	5		61
St. Petersburg,	16	5		801
New York,	27			1,322
Hiogo,	7	10		364
Lisbon,	2	10		123
Barcelona,	1			50

Potassium Nitrate—

Carthagena,	71 bgs.			£93

Salt—

Addah,	8 t.			
Akassa,	400			
Antwerp,	200			
Baltimore,	190			
Benin,	53			
Boston,	725			
Brass,	9½			
Calcutta,	5,777			
Cameroons,	33			
Chama,	5			
E. London,	18			
Ghent,	136			
Grand Bassa,	25			
Landana,	5			
Loango,	8			
Manaos,	7			
Manilla,			1	bx.
Matadi,	35			
Melbourne,	109			
Montreal,	860			
New York,	85			
Old Calabar,	246	18 c.		
Philadelphia,	65			
Pisagua,		11		
Pugwash, N.S.,	100			
San Francisco,	678			
Sherbro,	200			
Sierra Leone,	24			
Trinidad,	32	2		
Wellington,	5			
Barbadoes,	50			
Coquimbo,		10		
Dunedin,	410			
Halifax,	595			
M. Video,	13	8		
New Orleans,	400			
Quebec,	500			
Rotterdam,	288			
Rouen,	20			
Stockholm,	25	1		
Valparaiso,	2	12		
Wilmington,	219			

Salt Cake—

Philadelphia,	150 t.	14 c.		
Montreal,	20	12		
East St. Louis,	200	15		
Baltimore,	321	15		

Saltpetre—

Bahia,		11 c.	1 q.	
Porto Alegre,		15		
Pernambuco,	1 t.	6	3	
Ceara,	1	12		
Halifax,		10		
Savanilla,		15	2	
Maranham,		9	3	

Sheep Dip—

Algoa Bay,	2 t.	16 c.		
B. Ayres,	26	12		

Soap—

Addah,	10 bxs.			
Algoa Bay,	250	300 cs.		
Amsterdam,	25			
Antigua,	100			
Antwerp,	200			
Axim,	25			
Banoka,	30			
Belize,	803			
Bombay,	1,105	5		
Calcutta,	500			
Cape Town,	2,046			
Christiania,	130			5
Colombo,	12	3		
Constantinople,	300			
Curacao,	200			
Durban,	200			
E. London,	100	695	13	
Genoa,	320			
Gibraltar,	30			
Grand Bassa,	30			
Hamburg,	100			
Havre,		2		
Kinsembo,	25			
Las Palmas,	120			
Lisbon,		1		
Loanda,	50			
Mossel Bay,	300			
M'pongwe,	100			
New Orleans,	280			
Old Calabar,	553			
Port Elizabeth,	125			
Port Natal,	493			
St. John's, Nfld.,	205	1		
Shanghai,	500			
Singapore,	25			
Smyrna,	32			
Truxillo,	310			
Accra,	20			
Alexandria,		4		
Barbadoes,	50			
Boston,				3
Callao,		2		
C. C. Castle,		3		
Nassau,	10			
New York,	900	21		
Para,		1		
Rotterdam,				41
San Francisco,	40			
Toronto,		400		
Wellington,		300		

Soda—

Lisbon,	4 cks.			

Soda Alkali—

Genoa,	35 brls			
Leghorn,	26			
Melbourne,	40			
Salonica,	35			

Soda Ash—

Baltimore,	376 cks.	200 bgs.		
Batavia,	25 brls.			
B. Ayres,	700			
M. Video,	50			
Montreal,	17			
Piræus,	30			
R. Grande,	50			
St. Nazaire,	20			
Adelaide,	40	48		
Boston,	263	2,100		
Callao,	15			
Canada,				
New Orleans,				
New York,	365	3,480		
Philadelphia,	644	1,040		
Port Alegre,		50	brls.	
Rio de Janeiro,		30		
San Francisco,				
Sydney,	163			

Soda Crystals—

Batavia,	130 kgs.	15 cks.		
Boston,				
Hong Kong,		50		

Arsenic—
- ntreal, 100 106
- w York, 60
- orto, 20
- iladelphia, 280
- nolulu, 9
- xandria, 20
- John's, N.B., 20
- n Francisco, 166
- alta, 50

ium Arseniate—
- w York, 20 cks.
- nen, 4 brls.

ium Biborate—
- twerp, 4 t. £120
- alifax, 7 c. 11
- mburg, 12 1 1 q. 356
- kohama, 50 cs. 90

ium Bicarbonate—
- exandria, 25 brls.
- ntoum, 60 kgs.
- rdeaux, 50
- mburg, 20 23
- vre, 115
- rail, 70
- rrachee, 40
- bon, 10
- rseilles, 20
- ples, 12
- rt Natal, 2 cks.
- John's, N.B, 375
- Petersburg, 200
- lonica, 115
- ntander, 50 60
- lelaide, 435
- giers, 37
- twerp, 20 2
- lcutta, 500
- ristiania, 20
- rsedin, 50
- rsoa, 265 5
- ntes, 4
- n Francisco, 30 tcs.
- dney, 530
- nidad, 36
- ra Cruz, 50

ium Bichromate—
- lcutta, 7 c. £9
- bon, 1 t. 11 40
- zeus, 3 cks.

ium Carbonate—
- nton, 168 brls.
- w York, 112

ium Chlorate—
- son, 1 t. £60
- mburg, 1 122
- twerp, 2 120
- son, 20 kgs.

ium Hyposulphite—
- w Orleans, 10 t. 1 c. 2 q. £70

ium Nitrate—
- w York, 1 t. 11 c. £35
- seria, 3 18 1 q. 35
- lbourne, 1 11 2 14
- rto, 1 1 9

ium Silicate—
- celona, 195 brls.
- nao, 50
- on, 10
- drid, 35
- ille, 150
- ncia, 14

ium Sulphate—
- thorn, 1 t. 15 c. 3 q. £11

ihur—
- nambuco, 1 t. 14 c. 1 q. £14
- to Alegre, 10 5
- ra, 12 6
- nt, 14 bgs. 11
- ladelphia, 334 260
- John's, N.B., 10 brls. 9
- son, 668 520
- lbourne, 465
- ntta, 9 t. 16 c. 2 q. 57
- dah, 2 19 1 32

huric Acid—
- sin, 10 c. £7

OW—
- nga, 66 tcs.
- terdam, 12 cks.
- tander, 30 brls.
- gapore, 1
- Bassam, 4

—
- Calabar, 7 brls.
- ngstone, 35 dms.

aric Acid—
- lifax, 3 c. £18

tish—
- exandria, 6 dms. 1 cs.
- en, 2
- ngo, 1

Verdigris—
- Yokohama, 1 t. 1 c. 3 q. £63

Zinc Chloride—
- Bombay, 5 t. 4 c. 1 q. £83

GLASGOW.

Week ending May 19th.

Ammonium Sulphate—
- Java, 157 t 5½ c. £1,657

Benzol—
- Rotterdam, 13 dms. £160

Bichrome—
- Antwerp, 5 t. 2¼ c. £120

Bleaching Powder—
- Hong Kong, 600 c. £335

Chloride of Lime—
- Boston, 6 t. 10 c. £48

Creosote Oil—
- Christiania, 130 brls. £65
- N. York, 2,000 glns. £22

Farina—
- Rotterdam, 20 bgs. £35
- Antwerp, 4 t. 17 c. £60

Iodine—
- Rotterdam, 3 cks. £1,120

Linseed Oil—
- China, 2 t. 12¾ c. £54
- C. Colony, 1 4 30
- Quebec, 4,126 glns. 346
- Charlotte Town, 12 t. 19 c. 245

Litharge—
- Antwerp, £32

Manganese—
- Rotterdam, 18 cks. £100

Manure—
- Java, 6 t. 1¾c. £55

Muriatic and Nitric Acid—
- China, £70

Paint—
- Sydney, 1 t. 5½ c. £31

Painters' Colours—
- Straits, £68
- Hong Kong, 4 t. 60
- C. Colony, 106

Paraffin Wax—
- Japan, 20 t. 4¾ c. £567
- C. Colony, 4 13¾ 144

Pitch—
- Boston, 25 t. 8 c. £53
- N. York, 27 4 60
- Quebec, 1 4¾ 58
- Caen, 630
- Bombay, 22 14 52
- Amsterdam, 7 17¾ £157 15s.

Potassium Bichromate—
- Rotterdam, 47 cks. £580

Potassium Prussiate—
- N. York, £846

Salts of Potash—
- C. Colony, 21 t. 6¾ c. £1,900

Sulphuric Acid—
- Straits, 6 t. 2¾ c. £31 15s.

Tallow—
- Straits, 22½ c. £26
- Rotterdam, 185 361

Tar—
- Christiania, 20 brls. £10
- Quebec, 22 t. 14 c. 79
- Bombay, 1 1½ 48

Varnish—
- Sydney, £35
- Calcutta, 40

White Lead—
- C. Colony, 3 t. 15¾ c. £66
- Sydney, 315
- " 7 160

HULL.

Week ending May 14th.

Alkali—
- Stettin, 110 pks.
- Trieste, 10 cks.

Bleaching Powder—
- Stettin, 2 cks.

Borax—
- Stockholm, 1 ck.

Caustic Soda—
- Danzig, 202 dms.
- Libau, 141
- Odessa, 75
- Stettin, 36
- Trieste, 6

Chemicals *(otherwise undescribed)*
- Abo, 20 cks. 50 pkgs.
- Antwerp, 1 cs.
- Amsterdam, 1
- Bordeaux, 20
- Bremen, 6
- Copenhagen, 23
- Christiania, 6 2 110 pks.
- Constantinople, 2
- Danzig, 6 4 30 kgs.
- Fiume, 9
- Ghent, 15
- Genoa, 50
- Gothenburg, 1 11 pks. 633 slbs.
- Hamburg, 45 cs. 12 20 pks. 100 bgs.
- Harlingen, 10
- Libau, 4 95 pkgs.
- Rotterdam, 40 cs. 25
- Reval, 1
- Rouen, 3
- Stettin, 35 20 kgs.
- Trieste, 18

Cottonseed Oil—
- Antwerp, 667 c.
- Bremen, 470
- Flushing, 283
- Gothenburg, 120
- Hamburg, 1,199
- Konigsberg, 17
- Rotterdam, 1,569
- Stettin, 100
- Stockholm, 300
- Trieste, 399

Creosote
- Newfairwater, 900 cks.
- Odessa, 100

Dyestuffs *(otherwise undescribed)*
- Antwerp, 3 cks.
- Danzig, 1 cs. 2
- Stettin, 1 20

Linseed Oil—
- Aalesund, 62 c.
- Bordeaux, 21
- Christiansand, 41
- Copenhagen, 102
- Christiania, 1,192
- Christiansund, 87
- Drontheim, 219
- Hamburg, 159
- Rotterdam, 466
- Stralsund, 7,020
- Stockholm, 70

Manure—
- Copenhagen, 17 cks.

Painters' Colours—
- Antwerp, 2 cs. 30 cks. 15 dms.
- Bordeaux, 10
- Copenhagen, 8 15 10 pkgs.
- Christiania, 9 84 pks.
- Dunkirk, 5 3
- Drontheim, 8
- Danzig, 17
- Ghent, 30 2
- Genoa, 4 cs. 37
- Gothenburg, 1 100
- Hamburg, 6
- Konigsberg, 20
- Leghorn, 58
- Naples, 48 pkgs.
- Odessa, 53
- Rotterdam, 9 36
- Rouen, 2
- Stettin, 27 102 t.

Pitch—
- Antwerp, 350 t. 2 bls.
- Dunkirk, 174
- Newfairwater, 47
- Venice, 272

Salt—
- Copenhagen, 5 t.
- Drontheim, 1 cs. 1 ck.

Soap—
- Antwerp, 2 kgs.
- Christiania, 15 cs.
- Drontheim, 1

Tallow—
- Bremen, 2 cks.
- Gothenburg, 10

Tar—
- Abo, 20 cks.
- Amsterdam, 14
- Danzig, 6
- Hamburg, 27
- Rotterdam, 2
- Stettin, 3

Varnish—
- Copenhagen, 3 cks.
- Hamburg, 21 cs. 18
- Rotterdam, 7

TYNE.

Week ending May 14th.

Alkali—
- Christiania, 20 t. 8 c.
- Rotterdam, 11 16
- Copenhagen, 2 12

Ammonia—
- Huelva, 1 t.

Antimony—
- Hamburg, 3 t. 10 c.

Barium Hydrate—
- Dunkirk, 45 t. 12 c.

Barytes—
- Rotterdam, 1 t.

Barytes Carbonate—
- Hamburg, 50 t. 14 c.
- Rotterdam, 50

Benzine—
- Bergen, 3 c.

Bleaching Powder—
- Dunkirk, 10 t. 1 c.
- Antwerp, 49 4
- Hamburg, 91 1
- St. Petersburg, 24 14
- Rotterdam, 2 4
- Copenhagen, 17 6
- Helsingfors, 10 1
- Oscarshamn, 5
- Bergen, 4 19

Caustic Soda—
- Hamburg, 2 t. 18 c.
- Arendel, 3
- Helsingfors, 6 1
- Abo, 1 19

Hydrochloric Acid—
- Huelva, 1 t. 4 c.

Linseed Oil—
- Hamburg, 5 c.

Magnesia—
- Hamburg, 6 c.

Nitric Acid—
- Huelva, 6 c.

Ochre—
- Hamburg, 4 c.
- Christiania, 3

Paint—
- Hamburg, 1 t. 2 c.
- Christiania, 7
- Gothenburg, 1

Painters' Colours—
- Bergen, 1 c.

Soda—
- Christiansund, 1 t. 17 c.

Soda Ash—
- Antwerp, 10 t. 13 c.
- Christiania, 2 11
- Laurvig, 15 3

Sodium Sulphate—
- Copenhagen, 27 t. 9 c.

Sulphur—
- Antwerp, 6 t. 1 c.
- Hamburg, 400
- Christiania, 25
- Rotterdam, 10
- Oscarshamn, 110

GOOLE.

Week ending May 4th.

Bleaching Powder—
- Ghent, 15 cks.

Chemicals *(otherwise undescribed)*
- Antwerp, 3 cks.
- Rotterdam, 117

Coal Products *(otherwise undesc'd.)*
- Antwerp, 8 cks.
- Hamburg, 25
- Rotterdam, 34

Dyestuffs *(otherwise undescribed)*
- Antwerp, 2 cxs.
- Boulogne, 3 1 cs.
- Ghent, 1 ck. 1

Pitch—
- Antwerp, 256 t.

GRIMSBY.

Week ending May 7th.

Chemicals *(otherwise undescribed)*
- Dieppe, 3 cks. 209 pkgs.
- Hamburg, 49

Manure—
- Esbjerg, 750 bgs.

Naphtha—
- Dieppe, 141 cks.

PRICES CURRENT.

WEDNESDAY, May 25th, 1892.

Prepared by Higginbottom and Co., 116, Portland Street, Manchester.

The values stated are f.o.r. *at maker's works, or at usual ports of shipment in U.K. The price in different localities may var*

	£	s.	d.
Acids:—			
Acetic, 25 °/₀ and 40 °/₀ .. .. per cwt.	7/- & 11/-		
,, Glacial .. .. ,,	50/-		
Arsenic S.G., 2000° .. .. ,,	0	13	6
Fluoric .. .. per lb.	0	0	3¼
Muriatic (Tower Salts), 30° Tw. .. .. .. per bottle	0	0	10
,, (Cylinder), 30° Tw. .. .. ,,	0	3	0
Nitric 80° Tw. .. .. per lb.	0	0	2¼
Nitrous .. .. ,,	0	0	1¾
Oxalic .. .. nett ,,	0	0	3
Phosphoric, 1750° .. .. ,,	0	1	2½
Picric .. .. ,,	0	0	10¼
Sulphuric (fuming 50 °/.) .. .. per ton	15	10	0
,, (monohydrate) .. .. ,,	5	10	0
,, (Pyrites, 168°) .. .. ,,	3	5	0
,, (,, 150°) .. .. ,,	1	5	0
,, (free from arsenic, 145°) .. .. .. ,,	1	7	6
Sulphurous (solution) .. .. ,,	2	15	0
Tannic (pure) .. .. per lb.	0	1	2
Tartaric .. .. ,,	0	0	11¾
Arsenic, white powdered .. .. nett per ton	11	5	0
Alum (loose lump) .. .. ,,	5	5	0
Alumina Sulphate (pure) .. .. ,,	5	0	0
,, ,, (medium qualities) .. .. .. ,,	4	15	0
Aluminium .. .. per lb.	2s. 8d. to	0	3 2
Ammonia, ·880=28° .. .. per lb.	0	0	3
,, =24° .. .. ,,	0	0	1¾
,, Carbonate .. .. nett ,,	0	0	3¼
,, Muriate .. .. per ton	21	0	0
,, ,, (sal-ammoniac) 1st & 2nd .. per cwt.	35/- & 33/-		
,, Nitrate .. .. per ton	40	0	0
,, Phosphate .. .. per lb.	0	0	10½
,, Sulphate (grey) London .. .. .. per ton	9	17	6
,, ,, (grey) Hull .. .. ,,	9	16	3
Aniline Oil (pure) .. .. per lb.	0	0	6¾
Aniline Salt ,, ... ,,	0	0	6¼
Antimony .. .. per ton	45	10	0
,, (tartar emetic) .. .. per lb.	0	1	0
,, (golden sulphide) .. .. ,,	0	0	10
Barium Chloride .. .. per ton	7	10	0
,, Carbonate (native) .. .. ,,	3	10	0
,, Sulphate (native levigated) .. .. .. ,,	45/- to 75/-		
Bleaching Powder, 35 % .. .. nett ,,	7	10	0
,, Liquor, 7 % .. .. ,,	2	10	0
Bisulphide of Carbon .. .. ,,	11	15	0
Chromium Acetate (crystal) .. .. per lb.	0	0	6
Calcium Chloride .. .. per ton	2	5	0
China Clay (at Runcorn) in bulk .. .. .. ,,	17/6 to 35/-		
Coal Tar Dyes:—			
Alizarine (artificial) 20 % .. .. per lb.	0	0	8¾
Magenta .. .. ,,	0	3	9
Coal Tar Products			
Anthracene, 30 % A, f.o.b. London .. per unit per cwt.	0	1	2½
Benzol, 90 % nominal .. .. .. per gallon	0	1	8
,, 50/90 ,, ... ,,	0	1	4
Carbolic Acid (crystallised 40°) .. .. .. per lb.	0	0	4⅞
,, (crude 60°) .. .. per gallon	0	1	2
Creosote (ordinary) .. .. ,,	0	0	1
,, (filtered for Lucigen light) .. .. ,,	0	0	2
Crude Naphtha 30 % @ 120° C. .. .. .. ,,	0	0	9
Grease Oils, 22° Tw. .. .. per ton	2	2	0
Pitch, f.o.b. Liverpool or Garston .. .. .. ,,	1	8	0
Solvent Naphtha, 90 % at 160° .. .. .. per gallon	0	0	11
Coke-oven Oils (crude) .. .. ,,	0	0	3
Copper .. .. per ton	46	17	6
,, Sulphate .. .. ,,	15	10	0
,, Oxide (copper scales) .. .. ,,	45	0	0
Glycerine (crude) .. .. ,,	13	0	0
,, (distilled S.G. 1250°) .. .. ,,	45	0	0
Iodine .. .. nett, per oz.	0	0	9
Iron Sulphate (copperas) .. .. per ton	1	12	6
,, Sulphide (antimony slag) .. .. ,,	2	0	0
Lead (sheet) for cash .. .. ,,	12	0	0
,, Litharge Flake (ex ship) .. .. ,,	14	5	0
,, Acetate (white ,,) .. .. ,,	25	10	0
,, ,, (brown ,,) .. .. ,,	17	10	0
,, Carbonate (white lead) pure .. .. .. ,,	20	0	0
Nitrate .. .. ,,	20		0

	£	s.	d.
Lime, Acetate (brown) .. .. per ton	5	17	6
,, ,, (grey) .. .. ,,	10	15	0
Magnesium (ribbon and wire) .. .. per oz.	0	2	3
,, Chloride (ex ship) .. .. per ton	2	7	6
,, Carbonate .. .. per cwt.	1	17	6
,, Hydrate .. .. per ton.	17	0	0
,, Sulphate (Epsom Salts) .. .. .. per ton	2	19	0
Manganese, Sulphate .. .. ,,	17	15	0
,, Borate .. .. per cwt.	2	12	6
,, Ore, 70 % .. .. per ton	4	5	0
Methylated Spirit, 61° O.P. .. .. per gallon	0	2	6
Naphtha (Wood), Solvent .. .. ,,	0	4	6
,, ,, Miscible, 60° O.P. .. .. .. ,,	0	4	4½
Oils:—			
Cotton-seed .. .. per ton	19	10	0
Linseed .. .. ,,	20	0	0
Lubricating, Scotch, 890°—895° .. .. .. ,,	7	5	0
Petroleum, Russian .. .. per gallon	0	0	4½
,, American .. .. ,,	0	0	5½
Potassium (metal) .. .. per oz.	0	3	7
,, Bichromate .. .. nett per lb.	0	0	4½
,, Carbonate, 90% (ex ship) .. .. .. per ton	18	0	0
,, Chlorate .. .. per lb.	0	0	7
,, Cyanide, 98% .. .. ,,	0	2	2
,, Hydrate (Caustic Potash) 80/85 % .. per ton	22	10	0
,, ,, (Caustic Potash) 75/80 % .. ,,	21	0	0
,, ,, (Caustic Potash) 70/75 % .. ,,	20	15	0
,, Nitrate (refined) .. .. per cwt.	1	2	6
,, Permanganate .. .. per cwt.	3	10	0
,, Prussiate Yellow .. .. per lb.	0	0	10
,, Sulphate, 90 % (ex ship) .. .. .. per ton	9	15	0
,, Muriate, 80 % (do.) .. .. .. ,,	7	17	6
Silver (metal) .. .. per oz.	0	3	4½
,, Nitrate .. .. ,,	0	2	10
Sodium (metal) .. .. per lb.	0	3	4
,, Carb. (refined Soda-ash) 48 % .. nett per ton	6	2	6
,, ,, (Caustic Soda-ash) 48 % .. ,, ,,	5	5	0
,, ,, (Carb. Soda-ash) 48% .. .. ,, ,,	5	7	6
,, ,, (Carb. Soda-ash) 58 % .. .. ,, ,,	6	5	0
,, ,, (Soda Crystals) .. .. .. ,, ,,	3	9	0
,, Acetate (ex-ship) .. .. ,,	16	5	0
,, Arseniate, 45 % .. .. ,,	10	10	0
,, Chlorate .. .. per lb.	0	0	8
,, Borate (Borax) .. .. nett, per ton.	29	0	0
,, Bichromate .. .. ,, per lb.	0	0	3¾
,, Hydrate (77 % Caustic Soda) (f.o.b.) nett pr. ton (10 ton lots)	11	10	0
,, ,, (74 % Caustic Soda) ,, ,, ,, (10 ton lots)	11	5	0
,, ,, (70 % Caustic Soda) ,, ,, ,, (10 ton lots)	10	5	0
,, ,, (60 % Caustic Soda) .. ,, ,, (10 ton lots)	9	2	6
,, ,, (60 % Caustic Soda, cream) (f.o.b.) ,, (10 ton lots)	8	17	6
,, Bicarbonate .. .. ,,	6	12	6
,, Hyposulphite .. .. ,,	7	15	0
,, Manganate, 25% .. .. ,,	11	10	0
,, Nitrate (95 %) ex-ship Liverpool .. .. per cwt.	0	8	7½
,, Nitrite, 98 % .. .. per ton	30	0	0
,, Phosphate .. .. ,,	15	10	0
,, Prussiate .. .. per lb.	0	0	7¾
,, Silicate (glass) .. .. per ton	5	7	6
,, ,, (liquid, 100° Tw.) .. .. ,,	4	5	0
,, Stannate, 40 % .. .. per cwt.	3	5	0
,, Sulphate (Salt-cake) .. .. per ton.	1	16	6
,, ,, (Glauber's Salts) .. .. ,,	1	15	0
,, Sulphide .. .. ,,	7	15	0
,, Sulphite .. .. ,,	6	12	6
Strontium Hydrate, 100% .. .. ,,	8	10	0
Sulphocyanide Ammonium, 95 % .. .. per lb.	0	0	7½
,, Barium, 95 % .. .. ,,	0	0	5
,, Potassium .. .. ,,	0	0	7¾
Sulphur (Flowers) .. .. per ton.	8	10	0
,, (Roll Brimstone) .. .. ,,	6	10	0
,, Brimstone: Best Quality (nominal) .. ,,	5	0	0
Superphosphate of Lime (26 %) .. .. ,,	2	7	6
Tallow .. .. ,,	27	0	0
Tin (English Ingots) .. .. ,,	100	10	0
,, Crystals .. .. per lb.	0	0	6¾
Zinc (Spelter) .. .. per ton	22	7	6
,, Chloride (solution, 96° Tw.) .. .. .. ,,	6	10	0

THE

CHEMICAL TRADE JOURNAL

AND

OIL, PAINT and COLOUR REVIEW.

Publishing Offices: 32, *BLACKFRIARS STREET, MANCHESTER.*

263. SATURDAY, JUNE 4, 1892. Vol. X.

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TENDERS.

TAR AND AMMOMMIA WATER

Directors of the Loughborough Gas Company,
repared to receive TENDERS for the surplus TAR and AMMONIA
o be produced at their works for one year, from the 30th day of June,

mated quantity will be about 400 tons of Tar and 900 tons of Ammonia

nd liquor to be delivered into the contractor's boats, at the wharf on the
l, Loughborough.
igth of the liquor to be tested by Twaddel's hydrometer (tempr. 60°), and
to state the price per ton commencing at 4 degrees up to 8 degrees.
s for the removal of the Tar and Ammonia Water to be sent at such
ay be required.
s, 10th of following month.
information may be obtained on application to the undersigned, to whom
accordance with this advertisement, must be sent not later than the 21st

tors do not bind themselves to accept the highest or any Tender.
J. B. BALL, C.E.,
rough, June 2nd, 1892. Manager.

COUNTY BOROUGH OF HALIFAX.

IANUFACTURING CHEMISTS AND TAR DISTILLERS.

Gas-Works Committee of the Halifax Corpora-
are prepared to receive TENDERS for the purchase of the surplus TAR
t their Gas-Works during the year ending the 30th of June, 1893.
may take place from the Railway Siding of the Corporation Gas-Works,
Canal Wharf of the Calder and Navigation Company, with which a Pipe
tes.
iculars may be obtained on application to the Engineer, Mr. Thomas
C.S., Gas-Works, Halifax.
enders, endorsed "Tar," stating the price offered per ton, and the mode
to be sent to the undersigned not later than Ten a.m., on Friday, the
e, 1892.
est or any tender not necessarily accepted.
By order,
KEIGHLEY WALTON, Town Clerk.
all, Halifax, May 28, 1892.

Advertisements.

Advertisements of Situations Vacant, Premises on Sale or To be Let,
ous Wants, and Specific Articles for Sale by Private Contract are
the *Chemical Trade Journal* at the following rates:—

30 Words and under ..... 2s. 0d. per insertion.
Each additional 10 words ..... 0s. 6d. ,,

**ements of Situations Wanted are inserted at one-half the
es when prepaid, viz.:—**

30 Words and under ..... 1s. 0d. per insertion
Each additional 10 words ..... 0s. 3d. ,,

ivertisements, Announcements in the Directory Columns, and all Adver-
s prepaid, are charged at the Tariff rates which will be forwarded on

isements intended for insertion in the current week's issue
ach the office by **Wednesday morning** at the latest.

THE FARMER AND THE FROZEN SNAKE.

THE old fable of the farmer who was mortally bitten by the snake he had saved from being frozen to death is a very familiar one, but unfortunately emphasises a truth which is verified almost every day; and there are many cases where a man's worst enemy is himself, in that he spends time and money in solving a problem, which, when solved, eventually recoils on his own head.

In the chemical trade during the last few months, much has been said concerning the difficulties which are overtaking this industry owing to the increase of foreign competition, and by some this movement is looked upon as a disaster which will overwhelm many of those who have felt the keen edge of the cutting-system on previous occasions.

But, be that as it may, we hold that the deadliest enemy of the chemical trade does not hail from that quarter. There is no need to look abroad in order to find it, it will be discovered much nearer at home, a fact which increases the subtlety of the danger, since it lurks in places where it is least expected, and where friendly co-operation should prevail.

It lies with our municipal and local authorities, who seem to regard with dislike any attempt on the part of chemical manufacturers to remove the stigma which has attached itself to them, by devising means to render the conduct of their business as inoffensive as possible.

It is but poor encouragement to manufacturers to endeavour to improve the *status* of such matters when their endeavours are met with cold water, their success ignored, and their failings, though constituting a minority, made the ground for prosecution.

A most pronounced instance of this occurred at Wolverhampton this week. It is well-known that to turn galvaniser's pickle into the sewers is illegal, on account of the trouble resulting both from its action on the sewers, and the subsequent treatment of the sewage, and on this account several manufacturers have given their attention to the matter, in the hopes of discovering some means of avoiding the evil. As a matter of fact a process has been devised and worked by Mr. A. Crosbie, of that town, which has produced satisfactory results. But this, apparently, did not please the Corporation. Why, it would be hard to say, unless it is that the occasional failure of the treatment at the sewage works is largely attributed to the presence of waste pickle, which, if successfully rendered inocuous, might cause some trouble in the discovery of a new *bête noir* on which to heap reproach.

At any rate, by means of a new manhole, samples of the effluent passing from the works were taken every hour day and night, and out of the large number of samples which must have been taken during the three months which this espionage was being carried on, three samples were found to contain iron and acid to an extent which indicated that the treatment had not been carried out in the usual way, either owing to accident or carelessness on the part of the workmen.

PRICES CURRENT.

WEDNESDAY, May 25th, 1892.

Prepared by Higginbottom and Co., 116, Portland Street, Manchester.

The values stated are f.o.r. *at maker's works, or at usual ports of shipment in U.K. The price in different localities may var*

	£	s.	d.
Acids:—			
Acetic, 25 % and 40 % .. .. per cwt.	7/- & 11/-		
,, Glacial .. .. ,,	50/-		
Arsenic S.G., 2000° .. .. ,,	0	13	6
Fluoric .. .. per lb.	0	0	3¼
Muriatic (Tower Salts), 30° Tw. .. .. .. per bottle	0	0	10
,, (Cylinder), 30° Tw. .. .. ,,	0	3	0
Nitric 80° Tw. .. .. per lb.	0	0	2¼
Nitrous .. .. ,,	0	0	1¾
Oxalic .. .. nett ,,	0	0	3
Phosphoric, 1750° .. .. ,,	0	1	2½
Picric .. .. ,,	0	0	10¼
Sulphuric (fuming 50 %) .. .. per ton	15	10	0
,, (monohydrate) .. .. ,,	5	10	0
,, (Pyrites, 168°) .. .. ,,	3	5	0
,, (,, 150°) .. .. ,,	1	5	0
,, (free from arsenic, 145°) .. .. .. ,,	1	7	6
Sulphurous (solution) .. .. ,,	2	15	0
Tannic (pure) .. .. per lb.	0	1	2
Tartaric .. .. ,,	0	0	11¾
Arsenic, white powdered .. .. nett per ton	11	5	0
Alum (loose lump) .. .. ,,	5	5	0
Alumina Sulphate (pure) .. .. ,,	5	0	0
,, ,, (medium qualities) .. .. .. ,,	4	15	0
Aluminium .. .. per lb.	2s. 8d. to	0	3 2
Ammonia, ·880=28° .. .. per lb.	0	0	3
,, =24° .. .. ,,	0	0	1¾
,, Carbonate .. .. nett ,,	0	0	3¼
,, Muriate .. .. per ton	21	0	0
,, ,, (sal-ammoniac) 1st & 2nd .. per cwt.	35/- & 33/-		
,, Nitrate .. .. per ton	40	0	0
,, Phosphate .. .. per lb.	0	0	10½
,, Sulphate (grey) London .. .. .. per ton	9	17	6
,, ,, (grey) Hull .. .. ,,	9	16	3
Aniline Oil (pure) .. .. per lb.	0	0	6¾
Aniline Salt ,, ... ,,	0	0	6¼
Antimony .. .. per ton	45	10	0
,, (tartar emetic) .. .. per lb.	0	1	0
,, (golden sulphide) .. .. ,,	0	0	10
Barium Chloride .. .. per ton	7	10	0
,, Carbonate (native) .. .. ,,	3	10	0
,, Sulphate (native levigated) .. .. .. ,,	45/- to 75/-		
Bleaching Powder, 35 % .. .. nett ,,	7	10	0
,, Liquor, 7 % .. .. ,,	2	10	0
Bisulphide of Carbon .. .. ,,	11	15	0
Chromium Acetate (crystal) .. .. per lb.	0	0	6
Calcium Chloride .. .. per ton	2	5	0
China Clay (at Runcorn) in bulk .. .. .. ,,	17/6 to 35/-		
Coal Tar Dyes:—			
Alizarine (artificial) 20 % .. .. per lb.	0	0	8¾
Magenta .. .. ,,	0	3	9
Coal Tar Products			
Anthracene, 30 % A, f.o.b. London .. per unit per cwt.	0	1	2½
Benzol, 90 % nominal .. .. .. per gallon	0	1	8
,, 50/90 ,, ... ,,	0	1	4
Carbolic Acid (crystallised 40°) .. .. .. per lb.	0	0	4⅞
,, (crude 60°) .. .. per gallon	0	1	2
Creosote (ordinary) .. .. ,,	0	0	1
,, (filtered for Lucigen light) .. .. ,,	0	0	2
Crude Naphtha 30 % @ 120° C. .. .. .. ,,	0	0	9
Grease Oils, 22° Tw. .. .. per ton	2	2	0
Pitch, f.o.b. Liverpool or Garston .. .. .. ,,	1	8	0
Solvent Naphtha, 90 % at 160° .. .. .. per gallon	0	0	11
Coke-oven Oils (crude) .. .. ,,	0	0	3
Copper .. .. per ton	46	17	6
,, Sulphate .. .. ,,	15	10	0
,, Oxide (copper scales) .. .. ,,	45	0	0
Glycerine (crude) .. .. ,,	13	0	0
,, (distilled S.G. 1250°) .. .. ,,	45	0	0
Iodine .. .. nett, per oz.	0	0	9
Iron Sulphate (copperas) .. .. per ton	1	12	6
,, Sulphide (antimony slag) .. .. ,,	2	0	0
Lead (sheet) for cash .. .. ,,	12	0	0
,, Litharge Flake (ex ship) .. .. ,,	14	5	0
,, Acetate (white ,,) .. .. ,,	25	10	0
,, ,, (brown ,,) .. .. ,,	17	10	0
,, Carbonate (white lead) pure .. .. .. ,,	20	0	0
Nitrate .. .. ,,	20		0

	£	s.	d
Lime, Acetate (brown) .. .. per ton	5	17	6
,, ,, (grey) .. .. ,,	10	15	0
Magnesium (ribbon and wire) .. .. per oz.	0	2	3
,, Chloride (ex ship) .. .. per ton	2	7	6
,, Carbonate .. .. per cwt.	1	17	6
,, Hydrate .. .. per ton.	17	0	0
,, Sulphate (Epsom Salts) .. .. .. per ton	2	19	0
Manganese, Sulphate .. .. ,,	17	15	0
,, Borate .. .. per cwt.	2	12	6
,, Ore, 70 % .. .. per ton	4	5	0
Methylated Spirit, 61° O.P. .. .. per gallon	0	2	6
Naphtha (Wood), Solvent .. .. ,,	0	4	6
,, ,, Miscible, 60° O.P. .. .. .. ,,	0	4	4½
Oils:—			
Cotton-seed .. .. per ton	19	10	0
Linseed .. .. ,,	20	0	0
Lubricating, Scotch, 890°—895° .. .. .. ,,	7	5	0
Petroleum, Russian .. .. per gallon	0	0	4⅝
,, American .. .. ,,	0	0	5⅛
Potassium (metal) .. .. per oz.	0	3	7
,, Bichromate .. .. nett per lb.	0	0	4½
,, Carbonate, 90% (ex ship) .. .. .. per ton	18	0	0
,, Chlorate .. .. per lb.	0	0	7
,, Cyanide, 98% .. .. ,,	0	2	2
,, Hydrate (Caustic Potash) 80/85 % .. per ton	22	10	0
,, ,, (Caustic Potash) 75/80 % .. ,,	21	0	0
,, ,, (Caustic Potash) 70/75 % .. ,,	20	15	0
,, Nitrate (refined) .. .. per cwt.	1	2	6
,, Permanganate .. .. per cwt.	3	10	0
,, Prussiate Yellow .. .. per lb.	0	0	10
,, Sulphate, 90 % (ex ship) .. .. .. per ton	9	15	0
,, Muriate, 80 % (do.) .. .. .. ,,	7	17	6
Silver (metal) .. .. per oz.	0	3	4⅛
,, Nitrate .. .. ,,	0	2	10
Sodium (metal) .. .. per lb.	0	3	4
,, Carb. (refined Soda-ash) 48 % .. nett per ton	6	2	6
,, ,, (Caustic Soda-ash) 48 % .. ,, ,,	5	5	0
,, ,, (Carb. Soda-ash) 48% .. .. ,, ,,	5	7	6
,, ,, (Carb. Soda-ash) 58 % .. .. ,, ,,	6	5	0
,, ,, (Soda Crystals) .. .. .. ,, ,,	3	9	0
,, Acetate (ex-ship) .. .. ,,	16	5	0
,, Arseniate, 45 % .. .. ,,	10	10	0
,, Chlorate .. .. per lb.	0	0	8
,, Borate (Borax) .. .. nett, per ton.	29	0	0
,, Bichromate .. .. ,, per lb.	0	0	3¾
,, Hydrate (77 % Caustic Soda) (f.o.b.) nett pr. ton (10 ton lots)	11	10	0
,, ,, (74 % Caustic Soda) ,, ,, ,, (10 ton lots)	11	5	0
,, ,, (70 % Caustic Soda) ,, ,, ,, (10 ton lots)	10	5	0
,, ,, (60 % Caustic Soda) .. ,, ,, (10 ton lots)	9	2	6
,, ,, (60 % Caustic Soda, cream) (f.o.b.) ,, (10 ton lots)	8	17	6
,, Bicarbonate .. .. ,,	6	12	6
,, Hyposulphite .. .. ,,	7	15	0
,, Manganate, 25% .. .. ,,	11	10	0
,, Nitrate (95 %) ex-ship Liverpool .. .. per cwt.	0	8	7½
,, Nitrite, 98 % .. .. per ton	30	0	0
,, Phosphate .. .. ,,	15	10	0
,, Prussiate .. .. per lb.	0	0	7¾
,, Silicate (glass) .. .. per ton	5	7	6
,, ,, (liquid, 100° Tw.) .. .. .. ,,	4	5	0
,, Stannate, 40 % .. .. per cwt.	3	5	0
,, Sulphate (Salt-cake) .. .. per ton.	1	16	6
,, ,, (Glauber's Salts) .. .. ,,	1	15	0
,, Sulphide .. .. ,,	7	15	0
,, Sulphite .. .. ,,	6	12	6
Strontium Hydrate, 100% .. .. ,,	8	10	0
Sulphocyanide Ammonium, 95 % .. .. per lb.	0	0	7½
,, Barium, 95 % .. .. ,,	0	0	5
,, Potassium .. .. ,,	0	0	7¾
Sulphur (Flowers) .. .. per ton.	8	10	0
,, (Roll Brimstone) .. .. ,,	6	10	0
,, Brimstone: Best Quality (nominal) .. ,,	5	0	0
Superphosphate of Lime (26 %) .. .. ,,	2	7	6
Tallow .. .. ,,	27	0	0
Tin (English Ingots) .. .. ,,	100	10	0
,, Crystals .. .. per lb.	0	0	
Zinc (Spelter) .. .. per ton	22	7	
,, Chloride (solution, 96° Tw.) .. .. .. ,,	6	10	

Such being the case it was contended that since three out of some hundreds of samples were not perfectly treated, it was useless for the manufacturer to plead that he was using "the best possible means" to overcome the evil, although he could show undoubtedly that he had used enough lime to not only neutralize the acid and precipitate the iron, but enough to give a decidedly alkaline reaction. Every facility was also afforded the Corporation officials for visiting the works, so that we cannot but think it would have been much more satisfactory if a man employed in the works had been invited to be present at the taking of the Corporation's samples, so that duplicates could have been taken if thought desirable, instead of which the manufacturer by assisting the Corporation to contend with the difficulty in this case was only fostering the adder which would eventually bite him.

There is a limit to all things, and if no allowance is to be made for accidents manufacturers will have a bad time of it, because upon the face of this prosecution Mr. Crosbie was as badly off (worse, in fact) than those who had done little or nothing, since there were four other firms summoned and fined.

But this case should apply in two ways. If it is no defence to contend that the best practical means are being employed, when only three out of all the samples taken over a period of some months fail to come up to the standard, we should think it was only fair, in common justice to the prosecuted firms, to see how many samples of the sewage effluent after treatment by the Corporation failed to show effective purification, especially if the samples were taken hourly.

Our own experience has been that the emission of an inky putrescible effluent is generally explained by stating that everything that can be done is being done, with possibly an allusion to storm water, an explanation which is put forward as an *ultimatum*.

But the unfortunate manufacturer has no storm water; he has only to learn that he has had an accident and must pay for it—a proceeding against which he has no remedy, unless it is to abandon his purification process and see that he gets full value for his money by letting his acid pickle do its worst, and then paying up and looking happy.

We should not recommend such a proceeding, however, but rather think that it will further the interests of the manufacturers if they will do their utmost to avoid pollution in any shape or form, so that ultimately the cry of "Chemic! Chemic!" will prove an empty one, and the whole burden of sewage purification will lie with those who at present are so prone to saddle chemical manufacturers with everything.

SOCIETY OF CHEMICAL INDUSTRY.

MANCHESTER SECTION.

THE last meeting of this session was held at the Victoria Hotel, on Tuesday 24th ult. The chair was taken at 7.15 p.m., by Ivan Levinstein, Esq. Several short papers were on the agenda list. The first was by Dr C. O. Weber, being the second part of his paper on "Researches on the formation of pigment lakes." The author gave a short summary of his paper describing the formation of lakes from acid colouring matters. He pointed out that barium chloride gave a precipitate with all of them except acid magenta, still a good many were only partially precipitated. Another paper was also read by the same author upon "Oil and iron stains in cotton cloth." The bulk of oil stains the author stated, could be removed by soaping with rosin soap if the stains were fresh. Iron stains were treated with 5° Tw. oxalic acid. When oil and iron stains occurred together, however, even oxalate of tin in hydrochloric acid failed to remove the stain.

Mr. G. E. Davis then read some further notes on "The estimation of nitrogen in coal gas," the gist of the paper being to show that the amount of nitrogen found was in accordance with the amount of air required to bring the illuminating power down to the tests given in a former paper. Mr. J. A. Wilson then read a paper on the "Testing of Turkey red oil" and "Estimation of starch." He recommended the use of the acetyl value in testing the former substance. He stated in connection with the estimation of starch, that, as a rule, the results obtained were too high because the flour or starch was not previously exhausted with water to remove fat, gum, and sugar, etc. In unextracted flour, he had found 77·4% starch and after extraction 57·5%. He described the process he used not being in favour of the pressure methed. Mr. G. E. Davis and Dr. Weber both spoke on the paper, the former making mention of results obtained by the pressure method. Dr. Weber called attention to the defects of the barium process. Mr. Wilson briefly replied. A short note from Mr. W. Wilson was communicated by Mr. Bell on "The analysis of two samples of snow taken in the vicinity of chemical works," the blacks and total sulphates being given, but no distinction was made between free and combined sulphuric acid.

Mr. Carter Bell then read "Some further notes on oils." The most reliable test the author had found for testing the liability of oils to give off inflammable vapours, was to note the rise in temperature when the oil was mixed with sulphur chloride. He had found that starting with the oils at 95° F. olive rose to 113° F. Palm oil to 151° F, and cottonseed oil to 180° F. The liability of waste cotton, etc., to spontaneous combustion when soaked in various oils he tested by heating the greasy wool in a water jacket and noticing the rise in temperature by a thermometer imbedded in the waste. There was a brief discussion on the paper, when after the usual votes of thanks to the Chairman, etc., the meeting terminated, the session having been an exceptionally interesting one on account of the number and diversity of the papers which had been presented.

LONDON SECTION.

AN ELEGY ON PROFESSOR HOFMANN.

The first part of the proceedings at the ordinary meeting of the section, held on Monday, May 30th, to avoid clashing with Whitsuntide, was occupied with the rendering of a graceful tribute to the memory of the late Professor Hofmann, many infrequent members arriving to take part in a function unique in its melancholy interest. Sir F. A. Abel was unable to be present, but expressed his entire sympathy with the object in hand in a letter, the contents of which were communicated to the audience, while Dr. Perkin, speaking as one of the early students of the late great chemist, recalled the universal love and respect in which he was held in this country as well as in that of his birth. Mr. W. Thorp, who could claim to be one of the latest, as Professor Perkin was one of the earliest students at the time of Hofmann's tenure of the chair, at the college of chemistry, said that perhaps the secret of his teacher's success as a trainer of young men to become chemists, with a real love for their science, was to be found in the unremitting and personal attention that he bestowed upon them, even when they were in the most elementary part of their studies. After Mr. Howard and Mr. Ludwig Mond had emphasised the feeling expressed by the remaining speakers and experienced by the meeting as a whole in its capacity as an epitome of the industrial portion of the chemical world, Mr. Tyrer summed up in a few well-chosen words, and called upon the members present to pass a vote of condolence with those who were even more immediately and personally bereaved than they. The interest of the occasion was enhanced by the exhibition of several photographs of the late Professor Hofmann at different stages of his career, and of a vigorous and well-executed bust.

MR. J. A. NETTLETON ON VINEGAR.

The first paper down for reading was one on the subject indicated above. Mr. Nettleton having admitted the difficulty of defining what was meant by "vinegar," said that the materials from which vinegar could be produced were of the most various description, but that whatever the material, competition was now so keen that it behoved the vinegar brewer to make every effort to carry the alcoholic fermentation of his wort to the utmost practicable limit, and during acetification to guard against loss by volatilisation in every possible way. Such loss might range from 6 to 20%, but the average was about 12%. Great care was necessary in packing the material over which the liquid to be acetified was allowed to trickle. The temperature also needed to be controlled, as the acetification was sluggish if it fell too low, and the loss by volatilisation was high if it rose unduly. The author did not think that the analytical methods at present in vogue for the discrimination of natural from artificial vinegar were altogether satisfactory. Natural vinegars would vary in their contents of acetic acid from 3·5 to 6·5%, and their contents of phosphates and nitrogenous matter also ranged between comparatively wide limits. He considered that the addition of preservatives and colouring matter should not be regarded as a sophistication.

DISCUSSION.

yrer having invited those specialists present to speak, Mr. Solomon wished to know what the author considered the a practicable percentage of alcohol in a wort for vinegar and inquired whether the effect of calcium sulphate in the is similar to that which made it a desirable constituent for the wer. He considered that our present analytical methods for the determination of the quality of vinegar with fair . Mr. Thomas Sebastian Davies said that in his opinion no ccrued from the introduction of air into the wort, and that it cely worth while to endeavour to avoid using new yeast for v, as the cost was trifling. He called attention to the fact that s of white vinegar were in use in Scotland, the first being an product prepared from acetate of soda, and the second the from genuine malt vinegar. Although nitrogenous extractive nd phosphates were absent from both, yet they were not as the latter contained the volatile principles of malt vinegar. owever, been condemned by a public analyst as not com- th the accepted idea of malt vinegar, and was therefore now white vinegar distilled from pure malt vinegar." Mr. Nettle- ply, said that the wort might contain about 10% to 12% of ut in practice this was never reached. With regard to Mr. iew as to the use of fresh yeast, he saw no reason why the is yeast should not be pressed in the manner now practised at .

A NOVEL ALLOY.

r by Dr. Rideal on "The Petroleum Jellies of Commerce" put down for reading, but for it had been substituted one by r Wright on certain aluminium alloys. The time at the of the meeting being somewhat short, Dr. Wright consented to ief abstract of his communication. The alloy in question had ined by mixing aluminium and antimony in the molten state. to the statements in the text books, the metals formed a ous fluid until certain proportions were reached, when the ss solidified, although its temperature was above that of the oint of silver. This property was the more remarkable fall of melting point is commonly observed when two metals orm an alloy, about the only exceptions being the aluminium y discovered by Professor Roberts Austen, and certain . The composition of the new alloy was expressed by the lSb corresponding to a composition of 18·5% of aluminium and antimony. The alloy, though somewhat brittle, was perfectly when freshly made, but on exposure to air it oxidised and fell ously to powder. It acted upon water at the ordinary re, and when the liquid was slightly heated evolved hydrogen it curiously enough the gas thus produced was free from

NOTTINGHAM SECTION.

ing of the Nottingham Section of the above society was held sity College, on Wednesday, May 25th, with Mr. L. Arch- C., of Derby, in the chair. Mr. Charles Spackman read a n the manufacture of Portland Cement from Alkali Waste ment by the Chance Sulphur Recovery Process." He drew to the fact that if calcium sulphate is present in the cement y not exceeding 5 per cent. although it then sets more slowly h is increased. If the amount is reduced to 3 or 4 per cent. ch more quickly. This latter result is obtained when using te by mixing it with marly clay, and then washing out part hate. Dr. Clowes, Messrs. C. Taylor, C. H. Field, J. T. d the chairman took part in the discussion which followed, meeting terminated with the usual vote of thanks to Mr. .

OLLUTION OF THE MERSEY AND IRWELL.

(Continued from page 355.)

nsideration of the Mersey and Irwell Prevention of Pollution was continued on Wednesday last week. Mr. Fitzgerald eply to the Chairman that the population represented in the presented by the opponents numbered 150,223.

W. Killick, a member of the Cheshire County Council, said t law was not adequate to prevent pollution.

Fletcher, chief inspector of chemical works, referred to the procedure in the Act of 1876, and the difficulty in really ie prevention of pollution.

nk Scudder, technical chemist, assistant to Sir H. Roscoe, ve of Manchester, said he was for nine years assistant to the ngus Smith, one of the inspectors under the Rivers Pollution was thoroughly acquainted with the Mersey, Irk, Medlock, well. Taking the Medlock as typical, its water was very foul, the impurity was such that oxygen disappeared and n followed. In warm weather the condition of the river was very offensive, especially near Manchester. The condition of the Irk was still more deplorable. The condition of these rivers was due partly to sewage and partly to manufactories, and there was no doubt that the impurity had been and still was increasing. No fish could live in these streams. (Laughter) He had recently inspected 41 works, and the processes there carried on and the effluents. In his opinion the provisions of the Bill would tend to stop pollution without pressing unduly on the manufacturers.

Cross-examined: If the sewage were kept out, the streams would be very much purer, and the Act of 1876 seemed to give powers to prevent sewage and mining and manufacturing pollutions entering the rivers.

Supposing for the last sixteen years powers of that kind have existed, the state of the rivers is because the local authorities have not exercised their powers? Certainly.

Re-examined: Since 1876 there had been a great advance in public opinion, and in knowledge of sanitary matters, and the time had arrived when both solid and liquid sewage should be prohibited from going into streams. There were certain processes which would prevent pollution.

The Chairman, at the resumed consideration of the Bill on Thursday, declared that the condition of the two rivers was a disgrace to civilization. Whether the proposed remedies were the best he could not venture to say, but he hoped everybody concerned would remember the enormous magnitude of the interests involved.

Mr. E. Sergeant, the medical officer of health to the Lancashire County Council, said the rivers were offensive to the sight and smell. Diphtheria and sore throat were more prevalent in the vicinity of polluted rivers than elsewhere, and children were the most susceptible to these influences. In some cases the raw sewage was poured direct into the stream, the sewage works not being used. He was in favour of prohibiting the passage of raw sewage into the streams, and thought the discharge of solid manufacturing refuse and cinders should be absolutely prohibited.

Mr. J. M. Fox, medical officer of the Mid-Cheshire sanitary district, said it was only by a poetic licence that the two rivers could be called by that word, for they were in fact open sewers. When the Manchester Ship Canal was opened the evils produced by them would be felt in all their dreadful reality, for the area of the pollution would be extended, the water blocked up in the docks, and the flow of the streams impeded. He urged that further powers should be given to the Joint Committee.

Mr. Arthur Tatton, chief inspector to the Lancashire County Council for the Mersey and Irwell district, said the condition of the Irwell was very bad. As the river ran through Manchester refuse could some times be seen floating on the surface, and the water was in a most horrible state, giving out at times abominable smells. He anticipated that the river's condition would be made worse by the Ship Canal, inasmuch as the flow would be slower. Two-thirds of the present pollution in the area came from 14 boroughs, and there was pressing need of additional powers to cope with the pollution.

Mr. F. C. Hulton, clerk to the Joint Committee and to the Lancashire County Council, explained the tedious and uncertain process of proceeding against offenders under the law as it stood at present, and referred to the proposed clause for the acquisition of land for the purpose of dealing with waste products as a very valuable one. Since the appointment of a medical officer of health for the county and the establishment of the Joint Committee for Lancashire and Cheshire, opinion had been stirred up on the matter of river pollution, and out of eighty-five sanitary authorities only four were opposing.

This closed the case for the promoters.

Mr. Moulton, addressing the committee for the petitioners, insisted that the promoters had not brought forward a single instance of the inefficiency of the existing law, and there was no evidence that this Bill would reach cases that the Pollution Act did not reach.

The Chairman, after a brief consultation with his colleagues, said the Bill was promoted by a committee essentially representative in character, and that body had adopted it by a unanimous vote. It therefore came before the Committee with the sanction of an authority perfectly well qualified to form an opinion on the subject. The defects of the Act of 1876 were well known. They were partly remedied by local Acts, partly by the measure of 1890. The last-named Act had been adopted by populations amounting to more than a million within the area dealt with by the Bill That was to say, the measure of 1876 had been condemned as unsatisfactory by nearly half the population interested. It was, he believed, acknowledged that the inefficiency of that measure arose from the restrictions it contained. It might almost be said that its only effective parts were those which hindered the operation of the other parts. This evil of the pollution of rivers was felt by all Lancashire men to be a scandal and disgrace. What more natural, what more just, than that the Joint Committee should take immediate steps to strengthen their own hands, knowing as they did that the law was inefficient? The present committee were impressed by the condition of affairs which the Bill was intended to remedy. There were four members present (Mr. Hobhouse, Sir R. Ranson, Mr.

Phillipps, and the Chairman himself), and they were entirely unanimous. He was not entitled to speak for Dr. Tanner, but in private he had not said anything to show that he would disagree with his colleagues As regarded Mr. Wilson, he had not attended the sittings since the first day, and his opinion was not known. It was clear, however, that the majority of the committee was in favour of the preamble, which he as a Lancashire man had great pleasure in declaring proved.

The Committee then proceeded to examine the clauses in detail.

The proposal to give the Joint Committee power to acquire land compulsorily, and let the same to manufacturers for the treatment of sewage, was struck out of the bill, the counsel for the promoters stating that there would be some objection in the other House to conferring such powers in a private Bill, and further, that insistance on the clause would mean delay. A clause was inserted for the protection of colliery owners discharging water into the rivers in the same condition as that in which it had been raised from the mine, and a definition was adopted to the effect that "pollution" of a river does not mean "innocuous discolouration"

The Chairman congratulated the promoters on the passing of this important Bill.

AUSTRALIAN BRANDY.

AN experimental shipment of Australian brandy from the distilleries of Messrs. Joshua Brothers, of Port Melbourne, was made last year, but the experiment was not entirely successful, by reason of the fact that inexperience had caused the shippers to place the spirit in new or green casks, which imparted their own flavour to the contents. This year the mistake has been remedied, and a shipment of 200 casks of sound Australian brandy lies in bond, and at the disposal of Messrs Howes and Edwards, of 27, Mincing-lane. The fact is one of considerable importance from two points of view. In the first place, the brandy being assumed to be of good and sound quality, it were no bad thing that Australia should take her place side by side with the Cognac district in supplying the spirit of which no less than 5,368,980 gallons are imported into this country every year. In the second place, it is matter of common knowledge in the brandy trade, and matter of common regret among the reputable members of the trade, that since the ravages of the phylloxera there as been an immense falling-off in the shipments of brandy from the Cognac district. In the importation of so-called brandy, however, there has been no falling-off whatsoever, the fact being that a great part of the fluid sold by auction under the name of brandy consists of spirits distilled from the potato or the apple, skilfully doctored with essences. With these ingenious but deleterious mixtures, which are sometimes sold at the low rate of 1s. 6d. per gallon subject to the payment of duty, the respectable brandy merchants have refused to concern themselves, preferring to endeavour to find, in the absence of a sufficient supply of true cognac, an adequate substitute in the shape of brandy distilled from genuine wines in some country other than France. California at one time promised to take the lead, and California brandy is both sound and honest, but by reason of the richness of the soil, the Californian product has an unquestionably earthy flavour. Under these circumstances it is satisfactory to find that the full-bodied Australian wines have been capable of producing a brandy which, while it is undoubtedly the genuine product of the grape, has been pronounced by experts to be palatable and of high quality, and to possess all the genuine characteristics of fine cognac. In price, the Australian product compares favourably with French brandy of equal quality, its present price, duty paid, being to that of cognac as 16s. 6d. to 21s. 6d., or, in bond, as 6s. to 11s. When it is remembered that the whole annual production of French brandy is, according to the official statistics of the French Government, barely equal to the consumption of the colony of Victoria alone, it must be admitted that Messrs. Joshua Brothers deserve every encouragement in their effort to push forward a colonial industry, and in their struggle, which they justly anticipate, against the prejudice which the persons interested in fictitious brandies will surely raise by every means in their power.

RECENT CUSTOMS DECISION.

CARBONATE OF POTASH.

IN the matter of the protest of R. R. Street & Co., against the decision of the collector of customs at Port Huron, Mich., as to the rate and amount of duties chargeable on certain carbonate of potash, imported per *Huron*, the following is the opinion by General-Appraiser Lunt :—

We find as facts that the protestants, R. R. Street & Co., imported into Port Huron, November 10, 1891, 10 boxes containing 240 tins of so-called carbonate of potash, upon which duty was assessed as an alkali not specially provided for, at 25 per cent. *ad valorem* paragraph 76 of the Act of October 1, 1890.

Upon a special report of the United States chemist at the New York, we find that said merchandise is crude carbonate of and not refined, as stated upon the labels affixed to the cans ; chemical constitution thereof is as follows :—

	Per cent
Water	12·04
Carbonate of potash	75·38
Carbonate of soda	5·89
Chloride of soda	6·52
Sulphate of soda	0·40
	100·23
Alkaline test, potash K_2O	59·01
Platinic chloride test, potash K_2O	51·35
Chlorine	3·90
Sulphuric anhydride	0·22

It appears from the evidence of the chemist that the article l somewhat advanced toward the condition of pearl ash, and crude or dark coloured as a certain quality of carbonate of pota is known as black salts.

This merchandise is labelled as the product of the Greenban Works of St. Helens.

The protestants claim that said merchandise is exempt fr under the provisions of paragraph 685 of the Act of October 1,

Upon the facts as found, it appearing that the merchandi refined carbonate of potash, we hold that it is exempt from crude carbonate of potash, under the provisions of paragraph 68 Act aforesaid. The protest is sustained.

PHOTOGRAPHING COLOURS.

WHEN M. Lippmann first announced to the Acadé Sciences, Paris, that he had found a method of photog the spectrum in its natural colours by producing irridescence film, he remarked that better results would probably be obt using more sensitive, isochromatic films. Of late he has w this direction, and recently presented to the Académie some graphs of coloured objects which are a decided improvemen earlier ones. The films he employs are of albumeno-bromide rendered orthochromatic by azalin and cyanin With these obtained brilliant photographs of the solar spectrum after an e of five to 30 seconds On two of these plates the colours w by light coming through the plate are complementary to those light reflected from the plate. Theory indicates that co colours should be photographed as well as simple ones by his and one of his plates is a view of a stained-glass window colours—red, green, blue, yellow ; others show a group of parti-coloured paroquet, and a plate of oranges with a poppy the top. The shades of the objects as well as their colours a fully reproduced. The flags and bird were taken in five to ten by means of electric or sun light, the others only after many exposure to diffused light. The green of leaves and the grey a stone building are also given on another plate ; but the bl sky comes out an indigo hue. M. Lippmann is now engaged feeting the orthochromatism of the plate.

COLOURING BRASS BLUE.

A COLD method of colouring brass a deep blue is as fo 100 grammes of carbonate of copper and 750 gra ammonia are introduced in a decanter, well corked, and shak solution is effected. There are then added 150 cubic centi distilled water. The mixture is shaken once more, shortly aft it is ready for use. The liquid should be kept in a cool firmly closed bottles or in glass vessels, with a large opening, t of which have been subjected to emery friction and covered by greased glass. When the liquid has lost its strength, it ca cuperated by the addition of a little ammonium. The articl coloured should be perfectly clean ; especial care should be clear them of all trace of grease. They are then suspended by wire in the liquid, in which they are entirely immersed, and fro movement is communicated to them. After the expiration or three minutes they are taken from the bath, washed in clea and dried in sawdust. It is necessary that the operation be c with as little exposure to the air as possible. Handsome sh only obtained in the case of brass and tombac—that is to say and zinc alloys. The bath cannot be utilized for colouring copper-tin, argentine, and other metallic alloys.

THE QUALITY OF LEEDS GAS.

wing is taken from the report of Mr. T. Fairley, the gas or Leeds, in which he states that during the period from to May 12th, 1892, "The proportion of total sulphur con- e Leeds gas has averaged 16·10 grains per 100 cubic feet. ng are the results of tests made at the works in grains per ect :—

	Date when Tests were made.		Total Sulphur.	Ammonia.	Carbonic Acid.	
	April, 1892.	May, 1892.			Weight.	Volume.
ie.....	22. 30.	7. 10.	14·04	0·23	40·75	0·05
y	21. 29.	5. 13.	16·68	0·91	48·90	0·06
.....	20. 28.	3. 11.	20·18	1.69	40·75	0·05
Works.	..	..	16·10	0·74	40·75	0·05
East	..	..	14·74	1·74	40·75	0·05

month the average illuminating power of the Leeds gas,), East Parade, the tests being calculated to a uniform con- f 5 feet per hour, and corrected for variations in temperature e, to a temperature of 60° Fahr. and a barometric pressure s, has been in standard candles (burning 120 grains of sperm - Standard Argand, 24-hole, 19·0 ; standard batswing, 19·8 ; ninating power meter, 18·9."

NAPHTHALENE IN COAL-GAS.

'HALENE occurs in coal-gas in the form of a gas. The er the retorts, the greater appears to be the amount of naph- med. According to the statement of E. Kunatts, in the *Zeitung*, it frequently happens that solid naphthalene ut in the gas-producing apparatus, or in the mains and pipes, ompletely blocks these up. The formation of the solid cake rought about by sudden condensation of the vapour, due to nstances, such as change of velocity, caused by diminution ion of the pipes, friction, or cooling. Steam is a good con- eat, it is the first to condense when the temperature falls, ikes heat from the benzine and naphthalene ; it is, therefore, the indirect cause of the separation of solid naphthalene ior let the gas used for 65 flames, at the gas works, of ss through two small purifying chests, containing calcium nd succeeded in avoiding any nuisance during the winter of According to these researches of Friedländer and Tieftrunk, the of naphthalene is dependent on the presence of ammonia, nia was therefore passed into the same pipes, but did not separation of naphthalene. The removal of ammonia is, without doubt connected with that of steam, benzine and e, when this is brought about by cooling to zero, or some erature. The author arranged an apparatus in the open air winter, in which the gas was well cooled, and thus freed as far from steam, benzine, and naphthalene. Glass windows e interior of the apparatus to be inspected, and the gas was cooled to within 2 or 3° of the external temperature. The f the works, which were connected with this cooler, remained bstruction throughout the winter. In the condenser snow frost were deposited, which melted at 0° to a turbid liquid, drops of a yellowish oil separated on the surface. Between 7°, 1 cb. metre of gas yielded 1·71 c.c. water and 0·02 c.c of 11·5 to – 16°, 3·835 c.c. water, and 3 c.c. oil. The nearer rature approached to zero, the less was the amount of oil, ce was taken by crystals of naphthalene. The illuminating ie gas was only diminished by 0·2 candles. The experiments at only a slight diminution of temperature is sufficient to separation of naphthalene. In one case, for example, the f a pipe by naphthalene was traced to the cooling effect of a pipe lying beneath it, the difference of temperature between d water being 6° in summer and 4° in winter. A tempera- is, therefore, by no means necessary to produce separation of ie, a sudden fall of a few degrees being quite sufficient. n of the naphthalene produced in the gas retorts remains in e other portion passing off with the gas from which it can be y cooling. In this operation sudden changes of temperature oided, so as to prevent the formation of solid naphthalene in tus. The author tried subjecting the gas to further cooling cation, and preventing the absorption of water in the holders tors by a layer of petroleum. The latter, however, dis- y the cement, and the experiment had to be given up. He ecommends drying the gas by cooling, using dry meters, and ny water with which the gas comes in contact with

Herr Hesse (Dresden) remarks that the naphthalene nuisance has not been introduced by the raising of the distillation temperature, but had been experienced to the same extent with the old furnaces of 25 years ago. The sole preventive for naphthalene in the pipes is a good, well-arranged system of condensation, in which the gas is gradually cooled. When generators are built which yield increased quantities of gas, the cooling must, of course, be proportionately increased, although this is frequently neglected. Two-thirds of the inhabitants of Dresden, for example, have to suffer from the naphthalene evil, whilst to the remaining one-third it is quite unknown. This is due to the fact that the new Dresden gas works, which supplies this third, possesses excellent condensing system, and a set of distributing mains of proper size. (*Journ. Gasbelund.* 1891. 34. 529.)

THE MIDDLEWICH SALT COMPANY, LIMITED.

SINGULAR ACTION.

In the Queen's Bench Division recently, Mr. Justice Mathew heard the case of Grierson *v.* Mason and the City and Counties Publishing Company, Limited. Mr. Kirby was counsel for the plaintiffs ; Mr. Macaskie appeared on the other side.

Mr. Kirby stated the action was brought to recover £243. paid by the plaintiffs, ironmongers at Ashton-under-Lyne, to the defendants to procure the allotment to them of 50 shares of £5. each in a company called the Middlewich Salt Company, Limited. The defendants were the owners of a paper called the *Financial Critic*, for which the plaintiffs were on the books as subscribers. On the 20th November they received a letter from the defendants saying they had obtained an option of underwriting in respect of the Middlewich Salt Company on behalf of themselves and clients. They could therefore offer a few of the shares at £4. 17s. 6d. if application were made forthwith. The plaintiffs instructed the defendants to get them 50 shares at that price, and later on sent the money.

Mr. Macaskie explained that on the 19th May, 1891, his clients sent the Messrs. Grierson transfers which they executed. They were sent on to the Company The plaintiffs said they had never received the certificates. If so, their remedy was against the Company, which went into liquidation.

Mr. Grierson gave evidence that he and his brother paid the £243. for the shares and signed the transfers, which were sent back to Mr. Mason. He had never received the certificates.

Mr. Macaskie said the substantial question was whether or not his client had shares or the right to shares which he could transfer. He had underwritten these shares by a contract with Russell, the promoter. He was to underwrite 1,000 shares and debentures and have a commission of 10 per cent Accordingly the defendant, in order to enable him to transfer to Grierson, went to Russell and got a certified transfer for 100 shares Afterwards he executed the deeds of transfer, which were sent to the plaintiffs, and upon Mr Mason giving them back he took them to the Company and obtained receipts, which placed the matter beyond dispute.

Mr Frederick Mason said he was the managing director of the City and County Publishing Company, and he entered into a contract with Russell, the vendor, to underwrite shares. Witness produced a copy.

Mr. Justice Mathew ruled it was inadmissible against the plaintiffs, as also the receipts referred to by Mr. Macaskie, the defendant saying he believed the transfers were sent.

Mr. Macaskie : How many shares were you entitled to on the 19th of August in this Company.

Mr. Justice Mathew : You must prove first he was a shareholder.

Mr. Macaskie : If the deed of transfer is lost I submit I am entitled to give secondary evidence.

Mr. Justice Mathew : Oh, he says he believes it was sent.

Mr. Macaskie : That is all the evidence I have.

Mr. Justice Mathew : There must be judgment for the plaintiffs for £219. 7s. 6d. There is no proof this gentleman is a shareholder or in a position to make the transfers he sent. The plaintiffs have not got what they bargained for.

Mr. Macaskie : Upon the pleadings there is a charge of fraud.

Mr. Justice Mathew : No evidence has been given upon which I could with any propriety say there is any foundation for a charge of fraud.

Mr. Macaskie : That is quite sufficient for my client.

A LARGE PLATE OF GLASS.—The largest plate of glass, save one, ever cast and successfully polished is now in the shipping room of the Elwood Plate Glass Works, U.S.A. It was cast and successfully polished within a week. It is 127x200 inches The largest plate ever made measured 166x300 inches.

CONDITION OF THE LONDON WATER.

THE report of Mr. William Crookes and Mr. William Odling on the London water supply, for the month ending April 30th, states that, of 168 samples examined, the whole were found to be clear, bright, and well filtered. The report proceeds:—"The satisfactory condition of the water supply to the metropolis exhibited throughout the preceding months of the year has been more than maintained during the past month. But in respect to the results indicative of the nearly always minute proportion of organic matter present in the water, so long as the figures continue low, too much stress must not be laid on their monthly or even weekly variations. According to the more or less favourable meteorological conditions affecting the river from time to time, these figures will vary more or less, and have, during the past month, proved to be exceptionally low. Thus, taking the Thames-derived water for comparison—and a similar result is apparent in the case of the New River and East London Companies' supplies—the mean amount of organic carbon present in the April supply was only 0·125 part in 100,000 parts of the water, as against a mean for the January supply of 0·158 part, and a mean for the first three months of the year of 0·146 part in 100,000 parts of the water. But even as between the January and April supplies, the difference in the mean proportions of organic carbon present, or 0·033 part in 100,000 parts, is quite immaterial, corresponding as it does to about the one-seventeenth part of a grain of organic matter in a gallon (*i.e.* 70,000 grains) of the water."

Parliamentary Jottings.

SUBSIDENCES FROM BRINE PUMPING.

On the order of the day for the second reading of the Brine Pumping (Compensation for Subsidence) Provincial Order Bill, in the House of Commons, on Tuesday,

Mr. Lawrence moved its rejection in the absence of Mr. A. de Tatton Egerton. He said the question of subsidence first came on the *tapis* in 1881, and it was then suggested, and subsequently agreed, that the area of compensation should be divided in four districts. The local boards interested in the matter were those of Northwich and Winsford. The Northwich Board passed a resolution some time since to the effect that they were perfectly content with the divisions of the area laid down in the bill passed ten years before. On the strength of that the Winsford Local Board went forward with a bill. But the Northwich Board then applied to the Local Government Board on the question of the area which was to be adopted for compensation, and an inspector came down and made an inquiry in the district. After due consideration he decided that there should be one large area for compensation rating and that was what Winsford deprecated. They had now to decide whether this provisional order, which carried that proposition out, should be passed or not. He appeared on behalf of the traders of Winsford, as well as of the local board of that district. The trade of that district was largely in the cheaper kind of salts. The cost of pumping done at Northwich was £4,800. a year, while that in Winsford was only £1,600. which was *prima facie* evidence that this bill should not be passed. At Winsford some 700,000 tons of brine were pumped with little subsidence, while there was greater subsidence at Northwich with only 300,000 tons, and this showed that the burden would be thrown on the shoulders of Winsford to pay for the subsidence at Northwich. A well-known expert who was examined before the Local Government Board inquiry affirmed that there was no damage done to the town of Northwich by Winsford. He thought in view of the circumstances of the case, and considering that Winsford had only one industry while Northwich had several, that he was entitled to complain of what had happened, and to ask that the district should be relieved from the adoption of the wide area of rating. The feeling against the bill was widespread, and if it was passed it would bring trouble and distress on everyone connected with the salt trade.

Mr. J. Gathorne Hardy, as chairman of the Committee which inquired into the question, said the question of area was not actually before the Committee at all, and the Committee took no evidence on it, because they knew it was a matter which would have to be settled by provisional order. But the evidence which was taken was such as to give the Committee a very fair opportunity of judging what would be the proper area of compensation. The Committee were practically unanimous that the area should be as large as possible, and if the present bill failed in any respect, it failed in the fact that the Government had not had the courage to make the whole salt area of Cheshire one area with regard to taxation for compensation. (Hear, hear.) It was clearly proved before the Committee that it was impossible in the matter of brine pumping to say where the mischief was being done. To adopt a small area would be to make people pay for what they had not done, and would reduce the benefit which would be likely to accrue from the Act.

Mr. Cross did not think the House could judge very well in a matter of that kind, but the House could judge whether there had been a breach of the understanding between the two local boards. Nothing could be clearer than the fact that there was an understanding arrived at that the districts of Winsford and Northwich should be separated. He thought the proposal now made would be a great hardship on the small and struggling town of Winsford, and he hoped the house would see that justice was done. (Hear, hear.)

Mr. Tollemache did not see how the House could enter into that unfortunate dispute, though he felt that the town of Winsford had been very badly treated in the matter. The bill which was passed last year passed through Committee entirely on the distinct understanding that there should be a compensation district created for each town, and he could not agree with the Chairman of the Committtee in the conclusions he had arrived at. He had no objection to the bill except that it was unfair to put the towns together in a compensation area. He suggested, however, that his hon. friend should not press the motion to a division, but should bring the question before the Committee. (Hear, hear.)

Mr. Stuart-Wortley said, in the absence of any of the representatives of the Local Government Board, he could only say that this was pre-eminently one of those cases in which the House in passing a compensation bill last year considered it should be dealt with by the ordinary procedure. It was a matter for geographical and scientific inquiry, which could not be settled then, and which had been inquired into by a skilled officer with expert evidence. Under those circumstances he hoped the House would not go behind the ordinary procedure. (Hear, hear.)

Mr. Brunner said he knew all the men who passed the resolution at the Local Board asking for the present provisional order, and he was sure they were men none of whom would stoop to do a mean thing. What they had done was done not because they did not wish to keep good faith with Winsford, but because, after hearing what was said before the Committee, they thought it would be unwise in the last degree to do anything else. Mr. Thomas Warr, a director of the Salt Union, who knew perhaps more about the question than anybody, said it was impossible to tell where the injury done by brine-pumping began and where it ended. After that declaration the meeting decided that it was impossible to divide the districts. It had also been stated that the principle of separate districts was fatal to the bill of 1881, and it was only now sought to pass this measure in the present form so that justice might be done.

Mr. Lawrence said he would not press his amendment, but would reserve any action he might take.

The bill was read a second time.

Legal Intelligence.

HIGH COURT OF JUSTICE—CHANCERY DIVISION.

(*Before Mr. Justice Kekewich*).

GADD *v.* THE CORPORATION OF MANCHESTER.

This was an action to restrain the alleged infringement by the defendants of a patent granted to the plaintiffs, Messrs. Gadd and Mason, in 1890, for a mechanical invention for controlling the up and down motion of gasholders. The defendants put in the usual defences in such cases—namely, no infringement, want of invention, want of novelty, prior publication and user, anticipation and invalidity of the specification. At the close of the evidence and arguments—which were of a highly technical character, and extended over several days—his Lordship reserved judgment. The judgment shows the extreme importance, in order that a patent may be sustained, of the provisional and complete specification being both in agreement.

The Attorney-General (Sir R. Webster, Q.C.), Mr. Moulton, Q C, and Mr. O. Leigh Clare appeared for the plaintiffs; and Sir Horace Davey, Q C., Mr. Warmington, Q C, and Mr. E. Carpmael for the defendants.

Mr. Justice Kekewich delivered an elaborate and exhaustive judgment, pointing out that the three main questions were—first, whether there had been a publication of the plaintiffs' alleged invention prior to the date of their letters patent; secondly, whether was such "non-conformity" (to use Lord Blackburn's expression in "Bailey *v.* Robertson," 3 App. Ca., 1,055) of the complete specification with the provisional specification as rendered the plaintiffs' letters patent invalid; and, thirdly, whether there had been an anticipation otherwise than by the publication, if any, above-mentioned. With regard to the first point, the question of publication or non-publication, apart from intention, was necessarily one of fact to be proved, and his Lordship

held that there had been no prior publication so as to invalidate the plaintiffs' letters patent. Upon the second question, his Lordship said the general law was clear, and the decision must turn on the construction of the provisional and complete specifications with the aid of expert evidence and by the light of what was proved to have been common knowledge. That the rule touching nonconformity still held good, notwithstanding recent legislation, was settled by the judgment on appeal in "Nuttall *v* Hargreaves" (1892, 1 Ch., 23) for every Court short of the House of Lords, and, having regard to "Vickers *v.* Siddall" (15 App. Ca., 496), might haply not be treated as open there. The rule and the reason for it depended on considerations of high practical value, which had influenced the arguments and conclusions on which they were supported. The bargain made with the patentee on behalf of the public was that, in return for the protection granted, he should make full disclosure of his invention in order that, though not capable of exercise during the period of privilege, it might at once be added to the stock of common knowledge, and that during such period all concerned might be distinctly warned what they might safely do, and beyond what line they would be trespassers. The necessity of this warning was enhanced by the reflection that in all departments of industry there were ever urgent needs known to and appreciated by students and workers, and that, consequently many hands and minds were often independently engaged in combating some difficult problem, with the result that several contemporaneously approached the same solution, all unconscious that others were as forward as themselves. For their sake, therefore, it was important that the first announcement of discovery—that made by the provisional specification—should be distinct, and that they should know at once what had been discovered and what not; how far they might yet usefully labour, and what had now been placed beyond their grasp; or, to borrow an expression from a note quoted during the argument, what was the "area of protection." Against this fair demand for information must be set the reasonable claim of a patentee for time to develop his invention. The last steps in the journey of discovery were often rapid—too rapid for minute observation of details, even though hitherto progress had been tedious; and, the goal once in sight, there was a natural anxiety, quickened by completion, to announce the fact forthwith and secure such advantages as pertained to it without pause or reflection. The Legislature had recognised the haste of the discoverer as reasonable, and yet had imposed conditions for the benefit of others. He was bound to disclose in his provisional specification the nature of his invention, but was allowed a sufficiently long time for developing and fully describing it. The liberty thus afforded him had been construed with some latitude, and nowhere was it made more ample than in "Woodward *v.* Sansum" (4 Pat. Ca., 166, 175, 178). Notwithstanding the ample liberty thus reserved to the patentee, the protection of others had never been disregarded, and in numerous cases the Courts had insisted on the principle that the complete must be conformable with the provisional specification in the sense that there must not be anything in the more perfect instrument which could not be found at least in embryo in that of less formal character. The invention in the present case was stated by the complete specification to consist in connecting by means of torsional or tensional gearing a number of points round the bottom curb of a gasholder in such a manner that, when one point therof tended to rise or fall, the same tendency was transmitted through such gearing round the circle to every other point. This statement expressly mentioned a tensional in contrast with a torsional method; and, inasmuch as the ultimate question—to solve which the preliminary inquiry was required was whether the tensional method was fairly within the provisional specification, such statement was, unfortunately, of little service except in showing, what was otherwise clear, that the tensional method was deemed essential by the patentee. His Lordship then went into a minute comparison of the two specifications, and came to the conclusion that the tensional method there fully described was not indicated in the provisional specification. His Lordship conceived that the evidence of Dr. Hopkinson, who was one of the plaintiff's witnesses, was well-nigh conclusive on the point. His expression was that the tensional method was "adumbrated" in the provisional specification. This, so far as his Lordship was aware, was the first use of such an expression applied to such a subject. It was capable of several interpretations, some of which would haply be sufficient to save the plaintiff's patent; but in the mouth of a witness of such learning and skill as Dr. Hopkinson his Lordship construed it to mean that, however broad and deep the shadow might be, there was nothing of substance, and that the shadow did not afford an outline from which the substance could be perfected. As to the third question—whether there had been an anticipation of the plaintiff's invention—his Lordship thought it unnecessary to decide it, having regard to his decision on the second question, though upon the evidence, he should have hesitated much and long before deciding against the plaintiffs on that point. The short result was that the plaintiff's case failed, and there would be judgment for the defendants, with costs, to be taxed on the higher scale.

QUEEN'S BENCH DIVISION.

(Before the Lord Chief Justice and a Special Jury.)

JOHNSTONE *v.* TILDEN AND OTHERS.

This was an action brought by Mr. William Johnstone, analytical and consulting chemist, for an injunction to restrain the defendants, the council of the Institute of Chemistry of Great Britain and Ireland, from excluding him from membership of the Institute, and removing his name from the register of fellows, which they had done upon a charge of unprofessional conduct.

Mr. Jelf, Q.C. (Mr. Pocock and Mr. Bernard O'Connor with him), for the plaintiff, said that the Court would not be troubled with the case. He had pointed out to his client that the charter of the Institute had given it large powers in dealing with the conduct of its members. On the part of the plaintiff he wished to admit that the defendants acted in good faith and in accordance with the rules of the Institute. The Solicitor-General would state that the action of the Institute was founded entirely on their view of the professional conduct of the plaintiff upon a single occasion, and involved no imputation upon his professional capacity or personal character. The plaintiff would undertake not to use the title of fellow or member of the Institute in the future. He, therefore, asked that the record might be withdrawn and no further proceedings taken between the parties.

The Solicitor-General, Q.C. (Mr. Boydell Houghton with him), for the defendants, in assenting to what had been stated by Mr. Jelf, said that the Institute were anxious to state that their action cast no imputation upon the professional capacity or personal character of the plaintiff.

Our Book Shelf.

INFLUENZA. By J. Althans, M.D.; 2nd edition, 363 p.p. Index. London: Longmans and Co., 1892.

A work describing the pathology, symptons, diagnosis and treatment of the recently much feared "grippe."

The work is apparently an exhaustive one and contains a good deal which will afford instructive reading to those interested in this malady.

It is by no means a practical book, except in the hands of a qualified medical man, and should not be looked upon as suitable for guidance in self-treatment. A useful list of modern literary contributions to this subject, from all sources, is given at the end of the work which has evidently been carefully revised and is well written.

BLOW PIPE ANALYSIS. By J. Landauer. Translated by J. Taylor. Second edition. 168 pp, 19 illustrations. Index. London: Macmillan and Co., 1892.

The use of blow pipe analysis in mineralogy is of considerable importance, and this work supplies a small but complete manual by which the assays by the dry method may be made in a systematic fashion.

After a short history of the introduction of blow pipe analysis, the various blow pipes which are recommended are described along with the apparatus and reagents which are required.

The various methods of making assays are then detailed, such as the dry tube method, borax bead or microcosmic salt, a list of the most suitable substances for use when practising these tests being given at the beginning of the book.

The flame reactions are then enumerated, both by the blow pipe and the inner cone of the Bunsen flame.

The substances to be tested for by special means are then arranged in alphabetical order, and the various tests described.

After thus giving the tests which are used to distinguish the elements and oxides, etc., a classification of the tests in a tabular form is made.

Two good systematic courses are given, the second being that due to Egleston, so that by the aid of these two tables a full assay may be made of any mineral or compound falling within their scope.

In addition to these two courses, there are also several very useful tables, such as the classification of the reactions with the borax bead and with microcosmic salt. The book ends with a table showing the reactions of the alkalies, earths, and oxides, before the blow pipe with and without the use of reagents.

Well illustrated and got up, printed in a bold and neat type, the book is one of the best upon the subject we have met with for a long time, being of a strictly practical and utilitarian character, a fact which commends it at once to the notice of those for whom the book has been prepared.

FARM-YARD MANURE. By C. M. Aikman, B.Sc., F.I.C. 65 pp. London: W. Blackwood and Sons, 1892.

Farm-yard manure is still one of the most popular manures, despite its longevity, and such being the case, it is desirable to ascertain the nature and constitution of the various kinds of farm-yard manure, in order to make the best use of it as a fertilizer. This is the object and aim of Mr. Aikman in his little book, which is really only a chapter from a larger work which is being prepared by the same author.

The subject is treated in three sections—solid excreta, urine, and litter. The refuse, both solid and liquid, from various animals is compared. As the result, it appears that the urine is of more value, weight for weight, than the solid excreta, the former containing most of the potash originally in the food, and the latter the lime phosphoric acid and magnesia. The most suitable substances for use as litter are also discussed.

There are some useful remarks on the use of so-called fixers, such as gypsum, ferrous sulphate, and Epsom salts. The remainder of the book is devoted to the application and fortification of farm-yard manure, by the addition of phosphoric acid, or other ingredients, as the special purpose for which it is to be employed may necessitate. Great stress being laid upon the application of the manure, according to its source, as opposed to its use as a "general" manure.

A short appendix has been added, which contains a number of analyses comparing the nominal value of the chief feeding stuffs, with the total fertilizing ingredients found in the excreta; and showing how the proportion of the necessary components of a good manure vary according to the age and state of the manure.

The book is clearly written in a practical style, and taken as a specimen of the author's capabilities, his larger work on "Soils and Manures," which is now in course of preparation, gives promise of being a valuable contribution to agricultural chemistry.

A GUIDE BOOK TO TECHNICAL LITERATURE. 230 pp. Prepared by John Birch and Co., London, 1892.

This work is designed for the guidance of those who, being in foreign countries require to acquaint themselves with the various works on engineering, and the technicalities of various industries.

The classification of the works is stated at the outset to be somewhat comprehensive, and in a good many instances it is so, to a degree. When there is a section for coal-gas, it is rather strange to find Lunge's coal-tar and ammonia under sundries, under the general heading, Industries and Processes.

Viewed as a whole, the work is a good and useful one, and will be found capable of rendering good service to those who are abroad.

Still, it is susceptible of considerable improvement, more particularly in the sections devoted to works on chemistry, fuel and the textile industries.

When contemplating a second edition, we should advise the compilers to subject the work to careful revision, since, although fully aware of the difficulty of compiling a thoroughly comprehensive list, the value of the work will be materially enhanced by the inclusion of several standard works, which are at present absent.

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H. B. AND Co.—We were aware of the fact. Your remarks are apt and you will find similar expressions of opinion in this issue.

A. C.—We are glad to receive matters of this kind and thank you for sending cutting.

THE NEW ALKALI ACT.

To the Editor of the Chemical Trade Journal.

SIR,—As tar and ammonia (sulphate) are very frequently worked on the same premises it should be seen that there is no power given to charge two registration fees, the £3. now charged for works where sulphate is made is sufficiently burdensome to small works. I know one instance of two works not far apart. In one 1,500 tons of sulphate per annum are produced, and in the other 4 (from liquor ex tar), and the registration fee in both cases is the same.

Yours etc.,
TAR DISTILLER.

SODA RECOVERY.

To the Editor of the Chemical Trade Journal.

DEAR SIR,—Having found your journal of much use to me in obtaining replies to various questions I should like to ask the assistance of you or any of your readers with the following queries.

A. What weight of coal slack will it take to convert 100 tons 58° soda ash (by dissolving to 20° Tw. liquor and then causticizing with lime) into its equivalent of 70% solid caustic?

I wish to find the profit betwixt buying ash and caustic.

B. (1.) What percentage of soda will be lost (when weak liquors of 3° to 20° Tw. are to be concentrated) in boiling down by means of fire heat playing direct on the soda liquor which is descending a zigzag system of plates in a tower, and not using the usual method of boiling down by heat applied *outside* pans.

(2.) Which method is cheapest when considering gain of coal in one and loss of alkali in the other?

I should also like further information upon the following:—

C. (1.) What weight of phosphorus is yearly made in England? Wagner's book, p. 417, states 1,750 tons!

(2.) What weight of coal does it take to make one ton of phosphorus?

(3.) What book will give me the best practical ideas in regard to making phosphorus?

Yours, etc.,
ALKALI.

Trade Notes.

GERMAN MANUFACTURERS AND THEIR AGENTS.—The changes among the representatives of German chemical works which have taken place in Lancashire during the last few years, and which are being talked about as going to take place, show the unscrupulous way in which some of these manufacturers go to work. Having as a rule to start with no experience of the English trade, they use their agents to build up a business for them, only to throw them over when they once have obtained, or think they have obtained, a footing in this market. It is not surprising that English firms of standing in the chemical or drysaltery trade will have nothing to do with such agencies, and we can only caution younger men in the trade against being made cats'-paws by manufacturers of this description.

A JUTE FACTORY DESTROYED.—A fire occurred on Monday at the jute factory, Dundee, occupied by Messrs. Ferguson & Sons. A large portion of the works was destroyed, and the damage is estimated at £20,000.

REMOVING ANILINE STAINS.—In order to remove aniline stains from the hands, the following is recommended:—Wash with 5 per cent. solution of common salt, then with solution of peroxide of hydrogen, and, lastly, with alcohol.

PERSONAL.—Mr. R. J. Elmhirst, who retired from his post as electrician to the P. and O. Company a few weeks ago, has been appointed to take charge of the electric light installation at the colliery and glass works of Messrs. Dan Rylands and Sons, near Barnsley.

SULPHUR.—During the three months ending March last, 854,084 quintals of sulphur were exported from Italy, as against 736,378 quintals for the same period of 1891. The chief exports this year have been—To France, 230,912 quintals; North America, 152,941 quintals; and Greece, 101,066 quintals, Great Britain coming next with 74,100 quintals. [Quintal=123·2 lbs., Ed. *C. T. J.*]

NEW CHEMICAL WORKS.—Manufacturing operations have now been commenced at the new chemical works of Messrs. Alex. Walker and Co. One of the chief products will be caustic soda. The new works are situated in a line with one of the Irvine chemical works recently acquired by the United Alkali Company, and like the others are situated on a portion of the Shewalton estate, which remains in the possession of the Earl of Glasgow.

NEW INSULATOR.—The latest suggestion in the way of insulators es from Germany, and is the invention of R. Pape. He mixes c parts of steatite with two of powdered chalk or magnesia and k, thoroughly incorporating these ingredients until the material has iiform "soapy" touch. The mixture can then be compressed into se masses and is now ready to be worked up into any convenient ı. To increase the insulating properties of this prepared chalk, it neaded with three parts of resin or shellac dissolved in alcohol until rt of "dough" is obtained, this is then dried, powdered, warmed ı constant stirring to 30° Centigrade, and finally compressed into moulds.

XAMINATION OF ESSENCES FOR TURPENTINE.—A solution is ıared as follows:—Twenty grms. of acid tartrate of potassium is ıralised with manganous carbonate (about 5 or 6 grams.), and dis-ed in 1 litre of water. Into a test tube is placed 3 c.c. of this tion with 5 c.c. of the essence to be tested, and 5 c.c. of ammonia tion (specific gravity 0·925), well shaken together, and placed in a er-bath for 30 seconds, and a current of air passed through. The is then removed, and its contents well shaken and allowed to rate. Most of the essential oils are only faintly tinged with yellow his treatment (except the oil of lemons and bergamot which are ured dark brown), but if any turpentine be present, a colouration ing from brown to very deep brown-black, occurs in the upper .

DIA-RUBBER SUBSTITUTE.—The growing scarcity of India er and gutta-percha, with its attendant rise in prices, has caused derable anxiety in the electrical industries that are dependent the supply of these commodities. Various substitutes have been sted A new preparation has been brought out which is said to great promise of meeting all the requirements of an efficient ıtor. It consists of Manila gum tempered with benzine, to which ldition of two per cent. of Auvergne bitumen, also mixed with ne, is added. These are thoroughly blended, and after five per of rosin oil has been added, a product is obtained having all the eness, elasticity, solidity, and durability of the best rubbers If roduct be too fluid, a further addition of 4 per cent of sulphur, ved by means of bisulphide of carbon, is made. The vulcaniza-of the material can be carried out in the usual way.

E PUMPHERSTON OIL COMPANY.—The report of the directors s company for the year ended April 30th states that after providing ıe maintenance of the works and mines during the year at a cost of 223., there is a balance at the credit of profit and loss account of 843., which, with the credit balance brought forward from last £2,254., makes £26,097., from which falls to be deducted interest lebentures and loans, £1,756., leaving £24,321., which the tors recommend should be disposed of as follows, viz.:—In writing r depreciation of works, &c., £7,000.; in payment of a dividend e rate of 6 per cent. per annum on the preference shares of the ıany, £3,928.; in payment of a dividend at the rate of 10 per cent. annum on the ordinary and deferred shares of the company, 050.—total, £21,978., leaving a balance of £2,363. to be carried ırd to current year.

IE CHEMICAL INDUSTRY.—The following table shows the import export trade in chemical products between Italy and Great Britain British possessions during the past two years:

	Imports.			Exports.	
	1890. Cwts.	1891. Cwts		1890. Cwts.	1891. Cwts
ıcids	8,640	6,388	...	—	—
ıtash and caustic soda (impure)	136,016	135,090	...	—	—
ıxides	17,344	20,440	...	—	—
ırbonates	59,765	68,460	...	—	—
hlorides	76,482	38,406	...	—	—
itrates	40,554	14,700	...	—	—
ılphates	258,442	308,596	...	—	—
ther chemical products	25,698	32,662	...	—	—
ım and resin	21,444	37,368	...	—	—
ap	9,514	8,550	..	19,018	21,156
ıric acid	—	—	...	34,050	28,272
ılt (marine and rock)	—	—	...	12,820	18,120

Market Reports.

REPORT ON MANURE MATERIAL.

here is less business doing in mineral phosphates owing to the ıce required for Florida descriptions for shipment, and the spring ıre season being now about over, the market is quiet for both phatic and ammoniacal material for prompt and early delivery.

For 75/80% Florida phosphate rock, 9d. per unit c.i.f. to U K, in cargoes, is asked, but we have not heard that this price has been paid. 8¼d. per unit is probably nearest value. Hot-air dried Peace River rock continues to sell at 7½d. per unit, and 7¼d. is nearest value of hot-air dried South Carolina River rock.

A cargoe of Syrian bones, arrived at port of call, has been sold for U.K., it is understood, at about £4. per ton. There are buyers of River Plate cargoes at £4. 2s 6d., but this price does not induce business for shipment. £4. paid for crushed Kurrachee bones, arrived at Liverpool. Nothing reported for shipment. Up to £4 10s. has been paid for fine quality East Indian bone meal, ex store Liverpool. Ordinary quality can be had at about £4. 2s. 6d. Business for shipment precluded by high prices demanded.

The nitrate of soda market continues to drag, and 7s. 9d. must be quoted as nearest value for ordinary quality on spot and 8s for refined. Due cargoes are worth about 7s. 9d. per cwt., though a shade over this is asked.

Further sales of home prepared dried blood have been made at 9s 6d. per unit free to rails at works. Kainit is easier and 42s. 6d. per ton, in bags, free to rails would now be accepted. Superphosphates are unchanged.

TAR AND AMMONIA PRODUCTS.

Benzol is slightly better, and business in 90's has been done at 1s. 9½d. and 1s. 10d. is being now asked. 50-90's is also better, and the price varies from 1s 4½d. to 1s. 5d. Anthracene remains flat, 30% A being 10½d., and 30% B 8d.

The sulphate of ammonia market remains quiet, and the amount of business passing is insignificant. Hull sulphate is offering at £9 16s. 3d., but buyers will not pay more than £9 15s., although it is understood that some business has been done at the former price. Liverpool is steady at £9 18s. 9d., stocks being well cleared for present delivery. There are considerable forward enquiries, but the buisiness done is entirely by speculators.

MISCELLANEOUS CHEMICAL MARKET.

There is no material change to report in the position of the market for alkalies. Soda ash is still in strong request, and the largest makers are all fully sold for some time ahead. Prices are firm at 1 5/16d. to 1⅜d. per degree f.o b. for ordinary Solvay and Leblanc makes. Caustic soda has received a slight impetus from the reduction in price. Current quotations are:—F o.b. Tyne, 77%, £11. 10s.; f o.b. Liverpool, 74%, £11. 5s.; 70%, £10. 5s.; 60%, £9. 2s. 6d.; cream, 60%, £8. 17s. 6d., 10 ton lots and upwards; 5s. per ton extra for smaller quantities. Bleaching powder steady at £7. 10s. f.o.r.; buyers for delivery over the year can secure a slight concession. Soda crystals are unaltered at £3. 5s to £3. 10s f.o.b, according to package. Chlorate of potash, 6¾d. per lb. Chlorate of soda, 8d. The price of sulphur has a lower tendency, and recovered is quoted on the spot £5. to £5. 2s. 6d. per ton at makers' works. Vitriol and muriatic acids continue in a steady position. White powdered arsenic has improved in value, and spot quotation is £11. 10s. f.o.r. Garston. Sulphate of copper, £15. 10s. to £15. 15s. at usual points. Brown acetate of lime rather firmer at £5. 17s. 6d. to £6.; grey less plentiful, and quoted £10s. 10s. to £10. 15s. White sugar of lead is nominally unchanged, but very little business doing. Brown sugar of lead, £17. 10s per ton. Nitrate of lead without improvement in value. Tin salts dearer, owing to advance in the metal. Zinc salts are also firmer for the same reason. Borax steady at £29. Potash, caustic and carbonate, are in fair demand, and prices are steady. Sulphocyanides are quiet. Yellow prussiate of potash has still a tendency downward in price. Aniline oil and salt are neglected, and there is no improvement in value; the same also applies to carbolic acid crystals.

LIVERPOOL OIL AND COLOUR MARKET.

LIVERPOOL, WEDNESDAY.

OILS.—Palm oil is rather firmer, Lagos having been selling at £20. 10s. During the week these have been sales, Accra at £19. 17s. 6d., and Salt Pond £19., all transit. Olive is practically without change, the market being steady with a fair business passing at the

ruling currencies. Linseed is to all intents and purposes at a standstill, the market being steady with a moderate demand at 19s. 6d. to 20s. per cwt. in export casks. Cottonseed: the slight improvement of last week is maintained, and prices during the week have been steady at 19s. 6d. for Liverpool refined, and 19s. 9d. for American. Castor oil gave signs of being steadier early in the week, but it is still feeble, good seconds Calcutta being quoted 2⅜d. to 2⅜d. first pressure. French, 2⅝d. per lb. Tallow is very quiet and the sales have been few. Prices are for North, 24s. 6d. to 25s. 6d., and South American 26s. 9d. to 27s. per cwt. Resin, common, is very quiet on spot at 4s. 1½d. There is a fair enquiry, however, for arrivals at 3s. 10½d. per cwt. Spirits of Turpentine continue to recede in price, having varied between 24s. 9d. and 24s. 6d. during the week. To-day the market is steady, with a moderate demand, at 24s. 6d. per cwt. American petroleum 5¼d. to 5¼d., according to quality. Russian refined, 4½d. per gallon.

COLOURS.—Prices continue unchanged. Ochres: Oxfordshire, common, £10; medium, £12., best, £15.; Derbyshire, common, 40s., medium, 50s., best, 60s. Welsh, best, 70s., seconds, 50s., and common, 18s.; Irish, Devonshire, 40s. to 45s.; French, J.C., 55s. to 60s.; M.C., 65s. to 67s. 6d. Umber: Turkish quiet. Devonshire, 50s. to 55s. White lead, red lead, and oxide of zinc unchanged. Venetian red, £6. 10s. to £10. Cobalt: Prepared oxide, 10s. 6d.; black, 9s. 9d.; blue, 6s. 6d. Zaffres: No. 1, 3s. 6d.; No. 2, 2s. 6d. Oxide of iron: common, £6.; medium, £10.; finest, £20.

THE METAL MARKETS.

LONDON, Wednesday.—Pig iron firm; Scotch warrants closed at 40s. 11½d. cash. Middlesbrough 40s. 3d. cash, and Hematite 50s. 11d. cash. Copper, steady. Chili bars, G.O.B.'s and G.M.B.'s closed at £46. 3s. 9d. cash, and £46. 12s. 6d. to £46. 18s. 9d. three months. Tin, firmer. Straits closed at £99. to £99. 10s. cash, and £98. 15s. to £99. 5s. three months. Australian, £99. cash; English ingots, £100. 10s to £101. 10s. Lead, firmer: Spanish, £10. 15s. to £10. 17s. 6d. English, £10 17s. 6d. to £11. Silesian spelter, ordinary, £22. 10s to £22. 12s. 6d. Quicksilver, firmer, first hands £6. 17s 6d., second hands £6. 16s. 6d. Copper shares, featureless: Cape, 1 7/16 to 1 1/2; Copiapo, 2⅜ to 2½; Libiola, 2¾ to 3; Mason and Barry, 4⅛ to 4¼; Rio Tinto, 17 to 17⅛; Tharsis, 4⅞ to 5; Namaqua, 1 3/16 to 1 5/16; Panulcillo, ⅜ to ½.

WOLVERHAMPTON, Wednesday.—The accountant's return shews a rise of 7d. on the two months previous. But compared with a year ago it is the same. The opinion at to-day's market in view of this declaration is that there is not likely to be any early change in iron prices or demand. In preparation of the Whitsuntide holidays increased time is being made at the ironworks this week. Prices are steady at £8. for marked bars, £7. 5s. single, and 62s. 6d. for all mine pig, 47s. for Lincoln, and 44s. for Northampton.

GLASGOW, Wednesday.—Market steady, with small business. Scotch done at 41s. 3d. and 41s. 2½d. one month; closing with buyers at 40s. 11½d. cash, sellers ask 41s. Middlesbrough closes with buyers at 40s. 3d. cash, sellers ask 40s. 4d. Hematite closes with buyers at 50s. 10½d. cash, sellers as 51s. 1½d.

THE LIVERPOOL MINERAL MARKET.

A good amount of business has been done this week, and prices continue to rule firm. Manganese: Arrivals this week have been somewhat larger. They have, however, all gone into consumption. Stocks are further reduced, and prices remain firm. Borate at 6¼d. per lb.; sulphate, £21. 10s.; oxalate, 1s. 6d. per lb.; chloride, £15.; carbonate, £12. 10s., steady. Magnesite: Raw lump quiet. Raw ground £6. 10s., and calcined £12. 10s. Bauxite (Irish Hill brand) in good demand; lump 20s. seconds 16s., and thirds 12s. French chalk: A few small arrivals to report this week; prices continue to remain steady, especially for "Angel White" brand and "Silvery," 90s. to 92s. 6d.; prime quality, 90s. to 95s.; and superfine, 105s. Barytes: Carbonate still scarce, especially best lump, at 90s. to 95s.; nuts, 70s. to 80s.; whilst finest white sulphate is steady. "Angel White," No. 1, 70s.; No. 2, 60s. to 65s.; No. 3, 45s. Pumice stone quieter. Iron ore steady; Billbao shipments unaltered; Irish and Cumberland easier. Santander and manganiferous, there is more doing. Emerystone: There is good inquiry for best brands at full figures; No. 1 lump, £5. 10s. to £6.; smalls, £5. to £5. 10s. Fullers' earth quiet; best lump, 55s.; fine impalpable ground, £7.; "Emerald" ground, 80s. Scheelite, wolfram, tungstate of soda, and tungsten metal continue firm without alteration. ore firmer. especially for higher grades. Antimony ore and me Asbestos firm. Potters' lead ore, smalls, £10. 10s. to £ Calamine easy. Strontia sulphate (celestine) quiet. Limespar un especially for English manufactured; old G.G.B. brand in de 50s. (ground). Felspar easy. Fluorspar: Best quality Ferro-manganese steady, 75%, £12.; 85%, £13. 15s. F brisk. Spanish, £5.; best Ceylon lump at last quotations; It Bohemian, £4. to £12. per ton. "Founders," £5. to £6.; Bl "Mineraline," £10. French sand, 20s. to 22s. 6d. Grour £45. to £50. China clay steady; common, 18s. 6d.; good 22s. 6d. to 25s; best, 30s. to 35s. (at Runcorn). Bog ore (iron) steady; finest quality 22s. to 23s.

TYNE CHEMICAL REPORT.

Tue

Chemicals are steady with a fair demand. The warm w affecting the output of soda crystals and stocks are being Bleach continues scarce, and firm at £7. 10s. to £7. 12s. 6d nett. Caustic soda and sulphur unaltered. Bleaching powde £7. 11s. 3d. and £7. 12s. 6d. per ton, hards, £7. 17s. 6d. caustic soda, 76/77%, £11. 15s. per ton, 70%, £10. 5s. recovered sulphur, 2 cwt. bags, £5. 5s. per ton; soda as £5. 8s. 9d. per ton, 52%, £5. 17s. 9d. per ton, 56%, £6. per ton; alkali, 36%, £4. 18s. 6d. per ton; white alka £6. 10s. per ton, 50% £6. 15s. 6d. per ton, 52%, £7. hyposulphite of soda, £7. per ton in 5-7 cwt. casks, £7. 15s. in 1 cwt. kegs, both in 10 ton lots; silicate of soda, 75° Tw. ton, 100° Tw. £4. per ton, 140° Tw. £4. 7s. 6d. per to crystals, in casks, £2. 17s. 6d. per ton gross weight, in 2 c £2. 17s. 6d. per ton nett weight; chlorate of potash, 7d. less 6%; pearl hardening, £3. 10s. per ton; pure white su alumina, £4. 10s. per ton; blanc fixe, £7. 10s. per ton; ch barium, £7. 10s. per ton; nitrate of baryta crystals, £19. nitrate of baryta, ground, £19. 10s. per ton; sulphide of £7. per ton; carbonate of alumina, £28. 10s. per ton; a of soda, £33. 10s. per ton; hydrate of barium, £11. per tc

South Durham salt scarce at 10s. 6d. to 11s. per ton f.o.b. T

Coals: Trade is very irregular, the market having been floo Yorshire and Scotch coal, for best steam 11s. 3d. to 11s. 9d. f.o.b., small steam weaker, 6s. to 6s. 9d. per ton f.o.b. Coke ton at ovens, with rather fuller supply

Durham strike: There appears to be a reasonable prospec strike being settled at an early date. Considerable pressure f side parties is being brought to bear upon both the coalowner miners representatives.

A later telegram from our correspondent states that the s terminated with a ten per cent. reduction.

WEST OF SCOTLAND CHEMICALS.

GLASGOW, Tue

The position of sulphate of ammonia has been steadily lowe is now down to a mark, which, in the experience of most of th has never been touched before. It has been bought without dif £9. 15s., and the expectation is that it will be cheaper still, the being very feeble indeed. For forward, £10. is spoken of, uncertain whether anything has been done at that.

There are no price changes in the common chemicals, but l powder and chlorate of potash are a trifle firmer, while caust show weakness, owing, it is said, to offers at lowered prices fro makers. The market on the whole remains very quiet.

There is as yet, no relief to the paraffin section of the hardly any selling doing, and makers, by compulsion, stockin exclusively. Notwithstanding the strain, prices have not bro but sellers or buyers must give way soon. Young's Paraffin C issued a report last week, announcing a 5 per cent. dividend, fall of 4. Another, one of the smallest, also declared, but had to divide. This nearly exhausts the list, at any rate, what will be non-productive, to a certainty.

Chief prices current are:—Soda crystals, £2. 17s. 6d., ne alum in lump, £5. 10s., nett Glasgow; soda ash, 1⅛d., l Tyne; caustic soda, white, 74°, £11. 10s., 70/72°, £10. 5s., £9. 5s. and cream, 60/62°, £9. all nett Liverpool; bic of soda, 5 cwt. casks, £6. 15s., and 1 cwt. casks, Liverpool; refined alkali, 1⅛d., less 2½% Tyne; bleaching £7. 10s. to £7. 12s. 6d. nett Tyne; saltcake, 36s. 6d.; borax refined, £29., and boracic acid, £37. 10s., nett Glasgow; bi of potash, 4½d. nett, for Scotch and English deliveries (f

nett f.o.b. Glasgow); bichromate of soda, 3¾d., nett, for Scotch nglish deliveries (for export 3½d. nett f.o.b. Glasgow); chlorate tash, 6¾d., less 5% any port; nitrate of soda, 8s.; te of ammonia, £9. 15s. to £9. 17s. 6d. f.o.b. Leith; noniac, first and second white, £35. and £33., less 2½% ort; sulphate of copper, £15. 10s., less 5% Liverpool; paraffin (hard), 2 15/16d., and soft 2 5/16d. to 3d. per lb.; paraffin wax, semi-refined, 3⅝d. to 4d.; paraffin spirit (naphtha), 6d. a ; paraffin oil (burning) 5d., 5¼d. and 5½d. according to kind, ks, for Scotch buyers (English and Irish sales about 1d. lower); lubricating), 865°, £3. 10s. to £4., 885°, £5. 5s. to £7., and 95°, £6. to £8. Week's imports of raw sugar at Greenock, 2 bags.

New Companies.

ON (ABERDARE) TIN PLATE CO., LIMITED.—This company was registered on rd ult., with a capital of £15,000., in £100. shares, to acquire and carry on the i Tin Plate Works and Gadlys Foundry, carried on at or near Gadlys, are, in the county of Glamorgan. The subscribers are:—

	Shares.
H. Spencer, 6, Working-street, Cardiff, solicitor	1
. Thomas, Plymouth-road, Penarth	1
. H. Forester, Skitty Park, Swansea, merchant	1
. W. Thomas, Whitchurch, near Cardiff, accountant	1
r W. T. Lewis, Aberdare, civil engineer	1
. T. Thomas, Murion Cottage, Aberdare	1
. S. Thomas, Lydbrook, Gloucester, engineer	1

RINCE LUBOMERSKI ESTATES" PETROLEUM SYNDICATE, LIMITED.—This ny was registered on the 18th ult., with a capital of £100,000., in £1. shares, uire the benefit to a certain lease or concession, granted by His Highness : Lubomerski, dated June 6th, 1891, to search for petroleum and ozokerit, and ie, work and develop the same on his Kruszelnica and Korezyn estates in a, and to adopt an agreement dated February 16, 1892 (parties not mentioned), it purpose. The subscribers are:—

	Shares.
. J. Neale, 54, Villa-street, Walworth, S.E., clerk	1
. Hall, 13, Warrior-street, Barnsbury, N., clerk	1
. Dennis, 5, Bowling Green-lane, Borough, clerk	1
Cunningham, 123, Lillington-street, Pimlico, S.W.	1
. Francatelli, 2, Albert-terrace, Albert-square, S.W., clerk	1
. H. King, 47, Effurt-road, Highbury, N.	1
Morton, 2, Mount Pleasant-lane, Upper Clapton, clerk	1

ITARY AND GENERAL INVENTIONS SYNDICATE, LIMITED.—This company gistered on the 21st ult., with a capital of £5,000., in £1. shares, to purchase erwise acquire and turn to account Mr. L. Dove's invention and patent for a itomatic disinfecting apparatus.

Gazette Notices.

PARTNERSHIPS DISSOLVED.

AND SANDFORD, Cullum-street, Fenchurch-street, E.C., analytical and tallurgical chemists.

HAM AND A. SKAIFE, under the style of Latham, Skaife and Co., Mitcham, rnish manufacturers.

CARRINGTON AND SONS, Prestwich, near Manchester, brewers, as far as gards G. F. Carrington.

C. D. TUSTIN AND W. B. TUSTIN, under the style of D. Horace, Cory and Co., Tustin-street, Old Kent-road, colour manufacturers, as far as regards W. B. Tustin.

BLEZARD AND GABBATT, Preston, wholesale druggists and drysalters.

CRANSTON AND SMITH, Aldershot, brick manufacturers.

BANKRUPTCY ACTS, 1883 and 1890.

Receiving Orders.

COLLINSON, WILLIAM, Hearn-street, Curtain-road, E.C., soap manufacturer.

HOWELLS, JAMES, Swansea and Killay, near Swansea, brick and tile manufacturers

GAMMAGE, ALBERT EDWARD, Leicester, chemist.

Adjudication.

HOWELLS, JAMES, Swansea and Killay, near Swansea, brick and tile manufacturers.

The Patent List.

This list is compiled from Official sources in the Manchester Technical Laboratory, under the immediate supervision of George E. Davis and Alfred R. Davis, who report professionally upon the value of Chemical Patents.

APPLICATIONS FOR LETTERS PATENT.

Use of Carbonic Acid Gas for Beverages. D. Rylands. 9,224. May 16.
Refractory Bricks, etc. T. M. Rymer-Jones. 9,235. May 16.
Supplying Hot Air to Furnaces. T. M. Rymer-Jones. 9,237. May 16.
Extracting Grease, Oils, etc., by Volatile Solvents. W. B. Walters. 9,281. May 16.
Nitrating Cellulose. C. F. Crosse, E. J. Bevan, and C. Beadle. 9,284. May 16.
Treating Vegetable Oils. G. W. Scollay. 9,292. May 17.
Cleaning Tin, Terne, and other Plates. W. Williams and E. Thomas. 9,313. May 17.
Production of Chlorine and Alkalies by Electrolysis. C. Kellner. 9,346. May 17.
Separating Electrolytic Alkali from the Electrolyte. C. Kellner. 9,317. May 17.
Thermometers. F. S. Tomey. 9,349. May 17.
Eliminating Sulphur from Iron. Sir A. Hickman. 9,352. May 17.
Plate Glass. T. C. J. Thomas. 9,397. May 18.
Soap Making. R. H. F. Finlay. 9,432. May 18.
Preparing Purple Iron Ore for the Reducing Furnace. J. Bowing. 9,442. May 18.
Preparing Purple Iron Ore for the Reducing Furnace. J. Bowing. 9,443. May 18.
Improvement in Coking Processes. J. Bowing. 9,444. May 18.
Obtaining Cyanides from Illuminating Gas. W. Foulis. 9,459. May 18.
Obtaining Cyanides from Illuminating Gas. W. Foulis. 9,474. May 18.
Use of Carbonic Acid Gas for Preserving Fruits. D. Rylands. 9,483. May 10.
Evaporating and Concentrating Liquids. W. J. Mirrless and D. Ballingall. 9,499. May 19.
Improvements in Cementation Furnaces. J. E. Filassier and J. Faure. 9,522. May 19.
Obtaining Sulphur and Sulphurous Acid from Hydrogen Sulphide. W. L. Wise. 9,563. May 19.
Improvement in Batteries. C. P. Shrewsbury and L. Dobell. 9,569. May 19.
Treating Peat for Fuel. W. Lowrie. 9,614. May 20.
Manufacture of Block Fuel. T. W. Lee. 9,618. May 20.
Manufacture of Artificial Fuel and Recovery of Tar Products. J. Bowing. 9,619. May 20.
Manufacture of Coke and Recovery of Tar Products. J. Bowing. 9,620. May 20.
Batteries. J. Vernhet. 9,623. May 20.
Construction of Ozonisers. E. Andreoli. 9,631. May 20.
Basic Dyestuffs. J. Y. Johnson. 9,633. May 20.
Magnetic Ferric Oxide Filtering Medium. C. H. G. Harvey. 9,685. May 21.
Extraction of Antimony from the Mineral Sulphide. J. Simpson. 9,701. May 21.
Aldehyde Compounds. H. H. Lake. 9,714. May 21.

IMPORTS OF CHEMICAL PRODUCTS

AT

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending May 21st.

ate of Lime—

States,	582 pkgs.	H. Wallace & Co.

id Acid—

land,	42 pkgs.	Soundy & Son
,,	34	Phillipps & Graves

il—

nce,	100 c.	Arnati & Harrison

sina Sulphate—

land,	14 pkgs.	Henderson, Craig, & Co.

Antimony—

E. Turkey,	38 t.	J. Bamber
E. Indies,	67	Pillow, Jones, & Co.
Germany,	129	Coml. Lighterage Co.
,,	129	Hoare, Wilson, & Co.
France,	15	Vivian, Younger, & Co.
N. Zealand,	5	P. W. Spence & Co.

Arsenic—

Germany,	10 pkgs.	Petri Bros.

Asbestos—

Italy,	£100	A. H. Smith
Persia,	10	Baxter & Hoare
,,	20	Phillipps & Graves

Barium Chloride—

Germany,	23 pkgs.	Petri Bros.
,,	21	H. Lambert

Barytes—

Germany,	22 cks.	W. Harrison & Co.
,,	20	S. H. Willoughby
Belgium,	85	W. Harrison & Co.
Holland,	12	H. Wallace & Co.
Germany,	24	Tough & Henderson
Holland,	8	J. L. Lyon & Co.
,,	22	W. Harrison & Co.
Belgium,	21	,,

Bromine—

Germany,	25 pkgs.	A. & M. Zimmermann

Caoutchouc—

Madagascar,	1 cs.	Hoare, Wilson, & Co.
Singapore,	44 c.	L. & I. D. Jt. Co.
Germany,	5	T. H. Lee
E. Indies,	262	Ross & Deering
Madagascar Estate,	66 c.	Procter Bros.
,,	1	Belize Estate Co.
,,	23	A. Cheney & Co.
U. States,	331 c.	Williams, Torrey, & Co., Ltd.
Belgium,	65	L. & I. D. Jt. Co.
E. Indies,	44	E. Barber & Co.
,,	163	G. Ward & Sons
Germany,	6	Craven & Co.
,,	15	Lewis & Peat
France,	30	Flageollet & Co.
E. Indies,	284	L. & I. D. Jt. Co.
Zanzibar,	10	Clarke & Smith
,,	115	L. & I. D. Jt. Co.
Inhambane,	20	,,

Carbonic Acid—

Holland,	25 pkgs.	Volcanic Æration Co.

Chemicals *(otherwise undescribed)*
Lyttleton, £13 Major & Field
Holland, 6 pkgs. R. Morrison & Co.
Germany, 7 Phillipps & Graves
Holland, 10 ,,
,, 6 H. Boyce
Germany, 38 £7 T. H Lee
,, 35 A. & M. Zimmermann
Denmark, £11 Bailey & Leetham
Germany, 6 Pickford & Co.

Citrate of Lime –
Italy, 10 pkgs. Harvey, Lockie, & Co.

Cream of Tartar—
Italy, 23 pkgs. Howards & Son
,, 1 Beresford & Co.
,, 8 Thames S. T. & L. Co., Ltd.
,, 30 B. Jacob & Sons
,, 11 Fellows, Morton, & Co.
France, 18 W. C. Bacon & Co.
,, 5 B. & F. Wf. Co., Ltd.
Holland, 12 ,,
France, 8 E. W. Carling & Co.
,, 5 J. Puddy & Co.
,, 5 M. Ashby, Ltd.
Holland, 104 Middleton & Co.

Dyestuffs *(otherwise undescribed)*
France, 10 pkgs. J. Burnett & Sons

Dyestuffs—
Aniline
Holland, 5 pkgs. J. Forsey
Anthracene
France, 19 pkgs. Burt, Boulton, & Co.
Argols
Italy, 2,444 pkgs. B. Jacob & Sons
,, 366 Thames S. T. & L. Co., Ltd.
Cochineal
Canaries, 16 pkgs. Swanston & Co.
Cutch
France, 25 pkgs. Hoare, Wilson, & Co.
Divi divi
E. Indies, 57 pkgs. Walker, Munsie, & Co.
Extracts
France, 76 pkgs. Prop. Chmbln.'s Wf.
U. States, 50 L. J. Levinstein & Sons
Canada, 320 S. Barrow & Bros., Ltd.
Belgium, 100 cks. L. J. Levinstein & Sons
Denmark, 12 Sorensen & Co.
Gambier
Singapore, 550 pkgs. Beresford & Co.
,, 228 R. & J. Henderson
Indigo
Germany, 16 chts. Elkan & Co.
E. Indies, 51 L. & I. D. Jt. Co.
,, 3 Benecke, Souchay, & Co.
,, 10 E. Bower & Co.
,, 10 Arbuthnot, Latham, & Co.
Myrabolams
E. Indies, 4,520 pkgs. Beresford & Co.
,, 1,333 Prop. Sun Wf.
,, 667 Dalton & Young
,, 1,541 J. P. Alpe & Co.
,, 730 A. Hagan
,, 800 S. Barrow & Bros., Ld.
,, 800 Lucas & Spencer's Wf., Ltd.
,, 2,734 J. E. Scott
,, 2,000 A. Hagan
,, 2,668 Marshall & French
,, 3,307 W. Shelcott
,, 5,012 L. & I. D. Jt. Co.
Orchella
France, 19 pkgs. L. & I. D. Jt. Co.
Portugal, 18 W. Burton & Sons
Saffron
Spain, 2 pkgs. Pickford & Co.
Sumac
Italy, 150 pkgs. W. Barter & Co.
,, 130 Hicks, Nash, & Co.
,, 26 Beresford & Co.
,, 700 J. Kitchin, Ltd.
France, 12 Hernu, Peron, & Co.
Italy, 1,247 Bailey & Leetham
,, 50 Italo Brit. S. N. Co.
,, 348 H. Gluck & Co.
,, 250 Brown & Elmslie
,, 150 Middleton S. S. Wf. Co.
Tanners' Bark
Adelaide, 206 t. Beresford & Co.
,, 85 Devitt & Hett
Adelaide, 93 Baxter & Hoare
Natal, 29 A. & W. Nesbitt
,, 25 Boutcher, Mortimore, & Co.
Melbourne, 18 Leach & Co.
Belgium, 38 ,,
,, 3 W. Balchin
Melbourne, 117 Beresford & Co.
,, 60 Baxter & Hoare
Adelaide, 20 Brooksbank & Sons
Hobart, 50 Leach & Co.
Auckland, 14 L. & I. D. Jt. Co.
Turmeric
Cochin, 120 pkgs. Wallace Bros.
,, 200 L. & I. D. Jt. Co.
,, 200 Union L. Co., Ltd.
Valonia
A. Turkey, 177 t. A. & W. Nesbitt
,, 62 Beresford & Co.

Farina—
Holland, 80 pkgs. J. Knill & Co.
,, 200 J. Anderson & Co.
Germany, 100 Humphrey & Co.

French Chalk—
Italy, £30 Pronk, Davis, & Co.
,, 45 W. M. Smith & Sons

Gamboge—
Singapore, 8 pkgs. L. & J. D. Jt. Co.

Glucose—
U. States, 500 pkgs. 500 c. Trier, Meyer, & Co.
,, 50 346 J. Knill & Co.
,, 40 219 J. Keiller & Son
Holland, 50 50 Props. Sun Wf.
France, 120 120 J. Barber & Co.
,, 200 200 Barrett, Tagant, & Co.
,, 200 200 L. Norman & Co.
U. States, 250 925 Prp. Chmbln.'s Wf.
,, 250 250 J. Barber & Co.
,, 130 780 Page, Son, & East
,, 550 550 Barrett, Tagant, & Co.
,, 75 405 Soundy & Sons
,, 100 575 Pillow, Jones, & Co.
,, 495 2,715 L. Sutro & Co.
,, 5,450 10,213 R. G. Hall & Co.
,, 1,250 1,250 C. F. Webster & Co.
,, 750 750 L. Norman & Co.

Glycerine—
Germany, £45 Beresford & Co.
,, 207 T. H. Lee
,, 42 Ellis, Kislingbury, & Co.
France, 184 N. S. S. Co., Ltd.
,, 306 Williams, Torrey, & Co.
Holland, 305 Spies Bros & Co.

Methyl Alcohol—
Italy, 1 dm. Lister & Biggs

Mica—
France, £40 Flageollet & Co.
E. Indies, 64 W. M. Smith & Sons

Ochre—
Holland, 9 pkgs. Phillipps & Graves
,, 11 Forwood Bros. & Co.
France, 78 cks. Beck & Pollitzer
,, 1 Stubbs, Wilson, & Co.
Belgium, 11 Forwood, Bros., & Co.
Germany, 5 Carwright & Co.
France, 10 brls. C. S. Lovell

Painters' Colours—
Germany, 5 cs. W. Harrison & Co.
France, 7 pkgs. Flageollet & Co.
,, 1 Bennett S. S. Co., Ltd.
Holland, 12 Phillipps & Graves
U. States, 6 J. Watson & Co.
,, 3 Pinchin, Johnson, & Co.
Belgium, 15 brls. Magee, Taylor, & Co.
Germany 7 L. & I. D. Jt. Co.
, 2 cks. Becker & Ulrich
Germany, 1 cs. A. G. Soutler & Co.
,, 25 Phillipps & Graves
,, 6 L. & I. D. Jt. Co.
Belgium, 20 Union L. Co., Ld.
Portugal, 9 brls. Major & Field
U. States, 100 pkgs. J. Melvin
Germany, 6 3 cs. T. H. Lee
U. States, 50 A. C. Davey
Holland, 1 J. Owen
Belgium, 4 9 cks T. Palmer
,, 10 cs. P. & O. S. N. Co.

Paraffin Wax—
U. States, 2,000 brls. H. Hill & Sons
,, 68 C. T. Bowring & Co.
,, 231 cs. Williams, Torrey, & Co.

Phosphate Rock—
Belgium, 50 t. Fox, Roy, & Co..
,, 30 D. McNaughton
Germany, 150 Prop. Sun Wf.
U. States, 1,100 Cloid, Routledge. & Co
Germany, 25 F. W. Berk & Co., Ld.

Phosphoric Acid—
Germany, 52 pkgs. Phillipps & Graves

Pitch—
Germany, 100 brls. Fellows, Morton, & Co.

Plumbago—
Ceylon, 145 brls. J. Cooper
,, 91 R. G. Hall & Co.
,, 101 Prop. Sun Wf.
Holland, 51 cks. B. Gallaway
Ceylon, 65 Litchfield & Co.
,, 394 Hoare, Wilson, & Co.
Holland, 69 bls. Doulton & Co.

Potash—
Germany, 10 pkgs. L. & I. D. Jt. Co.
France, 100 c. F.W. Berk & Co. Ltd.
Germany, 250 J. Jensen & Co.

Potassium Bichromate—
Germany, 2 pkgs. Elkan & Co.

Potassium Bromide—
U. States, 22 pkgs. Fuerst Bros.

Potassium Carbonate—
France, 30 pkgs. Beresford & Co.
Holland, 21 A. & M. Zimmermann
Germany, 7 cks. C. F. Gerhardt

Potassium Oxalate—
Norway, 20 pkgs. T. Palmer

Potassium Sulphate—
France, 509 pkgs. Weatherley, Mead, & Co.
,, 500 F. W. Berk & Co., Ltd.
Belgium, 53 cks. ,,

Pyrites—
Spain, 2,972 t. C. Tennant, Sons, & Co.
Portugal, 880 Mason & Barry, Ltd.

Rosin—
U. States, 500 brls. F. & S. Chiesman & Co.
,, 100 C. Tennant, Sons, & Co.

Salt—
Germany, £152 B. A. Smith

Saltpetre—
E. Indies, 575 bgs. Wrightson & Son
,, 494 Lucas & Spencer's Wf.
Germany 61 cks. J. Hall & Son
,, 40 P. Hecker & Co.
E. Indies, 1,267 C. Wimble & Co.
Germany, 4 Craven & Co.
Chili, 12,695 bgs. W. Montgomery & Co.
E. Indies, 590 L. & I. D. Jt. Co.
,, 213 Scheeps & Co.
,, 3,703 Ralli Bros.

Sodium Acetate—
France, 62 pkgs. T. Palmer
,, 16 H. Lorenz

Stearine—
Germany, 19 cks. 19 bgs. Price's Candle Co.
France, 100 H. Hill & Sons
U. States, 10 Beresford & Co.
Belgium, 25 C. S. Lovell

Sulphur—
Italy, 50 t. W. C. Bacon & Co.
,, 100 Fuerst Bros.
Holland 50 pkgs. Phillipps & Graves

Tallow—
Germany 7 cks. T. H. Lee
E. Indies, 2 Dyster, Nalder, & Co.
Sydney, 33 Hicks, Nash, & Co.
N. Zealand, 39 Low, Sons, & Bedford
U. States, 134 H. Hehl
France, 4 pkgs. Mory & Co.
U. States, 7 Pitt & Scott
Melbourne, 200 A. C. Curtis & Co.
,, 176 W. Pope & Co.
,, 122 Goad, Rigg, & Co.
,, 70 Wilkie & Somes, Ltd.
N. Zealand, 43 Hoare, Wilson, & Co.
,, 118 Elkan & Co.
U. States, 32 Fuerst Bros.
Sydney, 59 Dalgety & Co.
,, 48 Beresford & Co.
,, 44 Coml. Banking Co. of Sydney
,, 535 Cuthbert & Hall
,, 46 Primo & Oxford
,, 457 J. Greig
,, 71 L. & I. D. Jt. Co.
,, 679 Anning & Cobb
Adelaide, 9 ,,
Melbourne, 129 Elkan & Co.
,, 259 Baxter & Hoare
,, 2 W. F. Dennis & Co.
N. Zealand, 2 Z. M. & A. Co. of N. Z.
,, 99 Culverwell, Brooks, & Co.
,, 155 Brown & Elmslie
,, 15 Low, Sons, & Bedford
,, 73 Connell & Co.
,, 12 H. Hill & Sons
,, 117 A. Tremearne & Co.
,, 772 Flack, Chandler & Co.
Holland, 10 Phillipps & Graves
Adelaide, 168 J. Owen
Melbourne, 116 Ross & Deering
Sydney, 472 J. B. Curtis & Co.
,, 114 Connell & Co.
,, 140 Arnall & Harrison
,, 176 Sawer, Mead, & Co.
,, 99 Leach & Co.
Belgium, 2 U. Lighterage Co.
N. Zealand, 310 Phœnix Whvs. Co.
,, 45 Dalgety & Co.
,, 40 N. M. & A. Co. of N.Z.
,, 174 N. Z. & L. & M. A. Co.
,, 22 J. Morrison & Co.
Adelaide, 12 Goad, Rigg, & Co.
Melbourne, 588 Goldsbrough, Mort, & Co.
Sydney, 75 J. Horne & Co.
,, 429 A. G. Anderson

Tar—
Germany, 200 brls. Heydeman & Co.
France, 128 G. Dards

Tartaric Acid—
Holland, 20 pkgs. Middleton & Co.
,, 38 B. & F. Wf. Co., Ltd.
France, 13 W. C. Bacon & Co.

Tincal—
E. Indies, 54 pkgs. J. Puddy & Co.

Ultramarine—
Belgium, 14 pkgs. W. Harrison & Co.
Germany, 2 Glaeser & Vogeler
Holland, 9 Haeffner & Co.
,, 12 cs Hernu, Peron, & Co.
Germany, 6 Pickford & Co.
Belgium, 5 Leach & Co.
France, 20 cks. Hernu, Peron, & Co.

Varnish—
U. States, 15 pkgs. J. Watson & Co.
,, 27 Pinchin, Johnson, & Co.
Belgium, 6 T. H. Lee
U. States, 40 Williams, Torrey, & Co.
Belgium, 10 B. Young

White Lead—
Holland, 90 cks. Phillipps & Graves
,, 9 T. T. Creed
Germany, 10 Petri Bros.
,, 6 pkgs. Levin & Powell
,, 68 H. Lambert
,, 3 J. Matton
,, 5 A. Steadman & Sons
,, 61 Magee, Taylor, & Co.
,, 6 J. Owen
Austria, 56 cs. M. D. Co.
Belgium, 20 Colthurst & Harding
,, 20 brls. Brougham Young
Holland, 37 M. Ashby, Ltd.
France, 16 W. Harrison & Co.
Belgium, 8 D. C. Thomas & Sons

Zinc Oxide—
Germany, 100 cks J. Matton
Holland, 625 Soundy & Sons

LIVERPOOL.

Week ending May 19th.

Acetate of Lime—
New York, 2,659 bgs.

Ammonium Sulphate—
Marseilles, 8 brls. Coulon, Berthoud & Co.
,, 3 cks. Higginbottom & Co.

Barytes—
Antwerp, 22 cs.
Rotterdam, 12 cks.

Boracic Acid—
Leghorn, 62 cks.

Caoutchouc—
Hamburg, 7 cks.

Carbonic Acid Gas—
Rotterdam, 25 tubes 50 btls.

Chemicals *(otherwise undescribed)*
Rotterdam, 4 cks.

Cobalt Sulphide—
Havre, 19 cks. Cunard S. S. Co., Ltd.

Colours—
Rouen, 4 cks. R. J. Francis & Co.
In transit, 45 cs.
Rotterdam, 14 cks
Antwerp, 1 J. T. Fletcher & Co.
,, 6

Cream of Tartar—
Taragona, 7 pps.
Barcelona, 5 cks. Sachse & Klemm
,, 17
Rotterdam, 5

Dyestuffs—
Argols
Leghorn, 1 ck.
Cochineal
Las Palmas, 3 bgs. Widow, Duranty & Sons
Cutch
Rangoon, 3,195 bxs.
Divi Divi
Jamaica, 2 bgs.
Extracts
Rouen, 200 cks. Co-op. W. Society
Bordeaux, 100
Baltimore, 50 brls. Mucklow & Co.
,, 10
Marseilles, 60
Fustic
Carthagena, 405 ps. A. Dobell & Co.
Jamaica, 21 t.
Gambier
Singapore, 1,319 bls.
Myrabolams
Bombay, 1,628 bgs. D. Sassoon & Co.
,, 480
Sumac
Palermo, 100 bgs.
Barcelona, 100
Palermo, 370 30 bls.
Tannin
Hamburg, 4 cks.

Farina—
Rotterdam, 50 bgs.

Glucose—
Rotterdam, 20 kgs.
Dunkirk, 55 pkgs.

Glycerine—
Rotterdam, 5 cs. 5 t.

Guano—
Bahia, 4 cs. Millward, Bradbury & Co.

Manganese—
Kobe, 200 t. Macqueen Bros.

Manure—
Constantinople, 93 bls.

Mica—
Montreal, 1 bx. Allan, Bros. & Co.

Ochre—
Rouen, 118 cks. R. J. Francis & Co.
Bordeaux, 66
Marseilles, 15 cks. F. A. Richeux

Phosphate—
Dunkirk, 500 bgs.

Potash—
Rouen, 68 cks. Co-op. W. Society
Montreal, 50 brls. J. C. Linton
Dunkirk, 2 cks. 71 dms.

Pyrites—
Huelva, 5,358 t. Matheson & Co.

Rosin—
N. York, 100 brls. Tennants & Co.
Wilmington, 3,307
N. York, 501

Soap—
Cocos Island, 1 cs.
Leghorn, 500 bxs. Brown. Bros. & Co.
,, 500 cs. Weaver & Sterry
,, 3 brls.
Philadelphia, 5 crts.
New Orleans, 2,000 brls.
N. York, 10 cs. F. Kings & Co., Ltd.
Marseilles, 125 bxs. Allan, Bros. & Co.
Rotterdam, 1 cs. 3 cks.

Soapstone—
Bordeaux, 259 bgs. G. G. Blackwell

Sodium Acetate—
Rouen, 21 cks. Co-op. W. Society

Sodium Bicarbonate—
Genoa, 9 brls.

Sodium Nitrate—
Iquique, 17,420 bgs. The Primativa Nitrate Co.

Tallow—
Bordeaux, 25 cks.
Boston, 15 hds.
Philadelphia, 25 cs. 100 hds.

Tannic Acid—
Hamburg, 4 cks.

Tar—
Rouen, 20 cks. Co-op. W. Society

Tartar—
Bordeaux, 3 cks.
Naples, 3

Tartar Emetic—
Hamburg, 6 cks.

Tartaric Acid—
Rotterdam, 21 cks. 20 kgs.

Ultramarine—
Hamburg, 1 cs. 3 cks.
Rotterdam, 14 6

Verdigris—
Bordeaux, 2 cks.

White Lead—
Rotterdam, 6 cks.
Antwerp, 7

Zinc Oxide—
Rotterdam, 40 cks.
Antwerp, 135 brls.

Zinc White—
Rotterdam, 260 cks. O. & H. Marcus

GLASGOW.

Week ending May 24th.

Asbestos—
Boston, 2,120 sks.

Barytes Sulphate—
Terneuzen, 500 bgs. 41 cks.

Cream of Tartar—
Messina, 4 cks.

Dyestuffs—
Alizarine
Rotterdam, 60 cks. 3 css.
Aniline Colours
Rotterdam, 2 css. 3 cks. J. Rankine & Son
Extracts
Terneuzen, 8 cks.

Farina—
Terneuzen, 10 bgs.

Ochre—
Marseilles, 170 brls.

Paint—
Philadelphia, 1 brl.

Painters' Colours—
Terneuzen, 4 cks.

Pyrites—
Huelva, 1,740 t. Tharsis Co.

Soap—
Marseilles, 1 cs.

Sodium Nitrate—
Iquique, 915 t. A. Cross & Sons

Sulphur—
Catania, 50 bgs. 21 brls J. Pattison & Co.
,, 350 21

Tallow—
Boston, 100 brls.

Tartar—
Bordeaux, 6 cks.
Messina, 3

Zinc Oxide
Rotterdam, 10 brls. J. Rankine & Son

HULL.

Week ending May 21st.

Arsenic—
Hamburg, 4 cks.

Asbestos—
Bremen, 4 bls. Veltmann & Co.

Barytes—
Rotterdam, 5 cks. Sissons Bros. & Co.
Antwerp, 62 Bailey & Leetham
Bremen, 24

Borax—
Rouen, 2 cks. Rawson & Robinson

Caoutchouc—
Hamburg, 1 cs. C.M. Lofthouse & Co.

Chemicals—
Dunkirk, 55 pks. 4 cks. Wilson, Sons, & Co., Ld.
Bremen, 2 kgs. 1 cs. Veltmann & Co.
Antwerp, 80 pks. Wilson, Sons & Co., Ld.

Colours—
Danzig, 14 cks. Wilson, Sons, & Co. Ld.
Antwerp, 10 cs. G. Lawson & Sons
Flushing, 9 cks. 10 cs. Zeeland S. S. Co.
Rotterdam, 1 A. Sanderson & Co.
,, 5 11 pks. G. Lawson & Sons
,, 3 cs. Hutchinson & Son
Genoa, 7 brls. Wilson, Sons, & Co, Ld.
Bremen, 20 cks. Veltmann & Co.
Antwerp, 43 3 brls. Wilson, Sons. & Co., Ld.
Rotterdam, 17 9 cs. 73 pkgs. W. & C. L. Ringrose

Cream of Tartar—
Rotterdam, 1 cs. Hutchinson & Son

Dyestuffs—
Alizarine
Rotterdam, 6 cks. 55 pks. W. & C. L. Ringrose
Argols
Bari, 7 cks. Wilson, Sons, & Co., Ld.
Madder
Flushing, 6 cs. Zeeland S. S. Co.
Rotterdam, 1 ck. J. Pyefinch & Co.
Sumac
Trieste, 10 bls. Wilson, Sons, & Co. Ld.
Palermo, 1,050 bgs. 5 bls. ,,
Valonia
Smyrna, 101 t.

Farina—
Harlingen, 500 bgs.
Ghent, 360 bxs. Wilson, Sons, & Co, Ld.,

Glucose—
New York, 440 brls. Wilson, Sons, & Co., Ld.
,, 160

Glycerine—
Amsterdam, 5 pks. W. & C. L. Ringrose

Ochre—
Rouen, 111 cks.
Marseilles, 10

Pitch—
Amsterdam, 13 cks. H. F. Pudsey

Potash—
Rotterdam, 21 cks. G. Lawson & Sons
Hamburg, 2 kgs. T. F. Bell & Co.

Saltpetre—
Hamburg, 4 brls. G. Lawson & Sons

Soap—
Marseilles, 10 cs. Wilson, Sons, & Co, Ld.
Bari, 310 ,,

Sodium Nitrate—
Hamburg, 2,454 bgs.

Stearine—
Antwerp, 10 bgs. Wilson, Sons, & Co, Ld.

Tallow—
New York, 298 brls. Wilson, Sons, & Co., Ld.

Tar—
Marseilles, 55 cks.

Tartar—
Bari, 11 cks. Wilson, Sons, & Co., Ld.

Tartaric Acid—
Rotterdam, 12 cks. G. Lawson & Sons
,, 5 cs. Hutchinson & Son
,, 6 cks. W & C. L. Ringrose

Ultramarine—
Rotterdam, 4 cks. Hutchinson & Son

Waste Salt—
Hamburg, 1,591 bgs.

White Lead—
Rotterdam, 21 cks.
Antwerp, 51 Bailey & Leetham
Rotterdam, 9 T.F. Chambers & Co.
,, 4 Hutchinson & Son

Zinc Oxide—
Antwerp, 15 cks. Bailey & Leetham
Rotterdam, 25 brls. Sissons Bros. & Co.

TYNE.

Week ending May 21st.

Barytes—
Antwerp, 173 bgs. Tyne S. S. Co.

Colours—
Hamburg, 2 cks. Tyne S. S. Co.

Dyestuffs—
Alizarine
Rotterdam, 10 kgs. Tyne S. S. Co.
Sumac
Messina, 760 bgs.

Ochre—
Rouen, 399 cks.

Paint—
Gothenburg, 3 cks.

Phosphate Rock—
Ghent, 210 t.

Rosin—
Wilmington, 4,100 brls.

Saltpetre—
Hamburg, 162 t.

Sulphur—
Pomaron, 1,200 t. Mason & Barry

Tar—
Arendal, 1 ck.

Ultramarine—
Rotterdam, 5 cs. Tyne S. S. Co.

GOOLE.

Week ending May 11th.

Barytes Sulphate—
Antwerp, 50 bgs.

Caoutchouc—
Boulogne, 7 cks.

Colours—
Hamburg, 4 cks. 10 cs.

Dyestuffs *(otherwise undescribed)*
Boulogne, 14 cs. 4 pkgs. 9 cks.

Dyestuffs—
Alizarine
Rotterdam, 129 brls.
Tannin
Rotterdam, 20 brls.

Farina—
Hamburg, 170 bgs.
Rotterdam, 60
Delfszyhl. 1,700

Glucose—
Calais, 400 bgs.

Glycerine—
Hamburg, 10 cs. 4 drs.

Potash—
Hamburg, 3 cks.
Dunkirk, 40 drs. 6
Calais, 61

Pyrites—
Seville, 1,100 t.

Waste Salt—
Hamburg, 555 t. 602 cks. 500 bgs.

Zinc Oxide—
Antwerp, 10 brls.

GRIMSBY.

Week ending May 14th.

Caoutchouc—
Hamburg, 4 pkgs.
Rotterdam, 3

Dyestuffs *(otherwise undescribed)*
Dieppe, 36 cks.

Farina—
Hamburg, 75 bgs.

Pitch—
Dieppe, 5 cks.

Size—
Antwerp, 6 cks.

EXPORTS OF CHEMICAL PRODUCTS

OF

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Period ending May 21st.

Aluminous Cake—
Calcutta, 27 t. 2 c. £90

Ammonia—
Hamburg, 13 cydrs. £69
Rotterdam, 6 31

Ammonium Chloride—
Stettin, 13 c. £23
Varna, 12 18

Ammonium Sulphate—
Ostend, 20 t. 15 c. £222
Guadeloupe, 17 178

Borax—
Hamburg, 8 cks.

Carbolic Acid—
Treport, 6 cks. £10
Philadelphia, 81 cks. 372

Caustic Soda—
Philadelphia, 30 t. £341

Chemicals (*otherwise undescribed.*)
Melbourne, 20 pkgs. £17

Citric Acid—
Rotterdam, 2 c. £16
Nelson, 1 9
Algoa Bay, 2 7

Coal Products (*otherwise undesc'd.*)
Dunedin, 9 pkgs. £18
Sydney, 200 drs. 41

Coal Products—
Alizarine
Natal, 3 cks. £13
Aniline
Sydney, 3 cs. £43
Aniline Oil
Genoa, 10 drs. £400
Rotterdam, 12 430
Anthracene
Dusseldorf, 587 cks. £4,563
Benzol
Rotterdam, 60 cks. 32 pkgs. 20 pns. £1,728
Calais, 20 195
Creosote Oil
Treport, 56 brls. £100
Naphtha
Calais, 48 rnlts. £120
Pitch
Malta, 100 brls. £35
Helsingfors, 150 t. 305
Havre, 469 796
Dunkirk, 485 780
Cette, 950 1,500
Alexandria, 200 brls. 84
Treport, 50 t. 80
Bombay, 50 brls. 19
Tar
Helsingfors, 800 brls. £394
Bombay, 25 rnlts. 12
Tar Oil
Odessa, 250 cks. £218

Copperas—
Calcutta, 10 t. £21

Copper Sulphate—
Odessa, 5 t. 2 c. £73

Cream of Tartar—
Dunedin, 1 t. £90
Wellington, 18 c. 81

Flowers of Sulphur—
Nelson, 10 c. £5

Guano—
Guadeloupe, 309 t. 18 c. £3,408

Manure—
Guadeloupe, 107 t. £1,070
St. Vincent, 90 900

Oxalic Acid—
Rotterdam, 5 t. 7 c. £150

Phosphorus—
Oporto, 3 c. 4 cs. £76

Potash Crystals—
New York, 8 pkgs. £45

Saltpetre—
Oporto, 2 t. 5 c. £46
Nelson, 10 12

Sheep Dip—
Natal, 5 cs. £27
Punta Arenas, 140 280

Sodium Acetate—
Adelaide, 5 t. 3 c. £74

Sodium Bicarbonate—
Canterbury, 1 t. £8
Nelson, 1 8

Sodium Sulphate—
Ghent, 70 t. £105

Strontia Nitrate—
New York, 5 t. 7 c £140

Sulphur—
Algoa Bay, 145 kgs. £76

Sulphur Dioxide—
New York, 6 cs. £30

Sulphuric Acid—
Fremantle, 17 c. £8
,, 2 t. 12 10

Superphosphate—
Guadeloupe, 40 t. £160

Tartaric Acid—
Canterbury, 3 c. £20
Melbourne, 10 59

LIVERPOOL.

Period ending May 21st.

Alum—
Santander, 2 t. £15

Ammonia—
Manilla, 8 cs. £10 3

Ammonium Carbonate—
Marseilles, 15 c. £21
Montreal, 1 t. 18 1 q. 60

Ammonium Chloride—
Santander, 10 c. £16
Genoa, 4 2 q. 7
Trieste, 1 t. 4 36
New York, 5 7 133

Ammonium Sulphate—
Tonnay Charente, 51 t. 10 c. £474
Valencia, 152 17 7 q. 1,542

Bleaching Powder—
Antwerp, 200 brls.
Bombay, 13 cs.
Boston, 495 cks.
Callao, 5 cs.
Copenhagen, 6 cks.
Genoa, 32
Ghent, 8
Havana, 20 brls.
New York, 247 cks.
Oporto, 4
San Sebastian, 44
Trieste, 8
Vigo, 6

Boracic Acid—
Ensenada, 10 t. 1 c. 3 q. £399
Antwerp, 1 2 1 42

Borate of Manganese—
St. Petersburg, 2 cks. £25

Borax—
Hamburg, 1 t. 3 q. £35
B. Ayres, 1 kg.

Calcined Magnesia—
Constantinople, 1 cs.

Calcium Chloride—
Melbourne, 5 t. £11

Carbolic Acid—
Cenoa, 15 c. 2 q. £30
Hamburg, 4 1 58
Havre, 1 3 6
Galcutta, 10 cks. 36

Caustic Soda—
Adelaide, 60 dms.
Alexandria, 25
Bahia. 160
Baltimore, 200
Barcelona, 100
Beyrout, 32
Bordeaux, 500
Boston, 150 50 bxs.
Calcutta, 40
Cape Town, 2 cs.
Genoa, 109
Ghent, 5
Leghorn, 38
Lisbon, 60
Madrid, 320
Maraciabo, 10
Messina, 55
Monte Video, 25
Nantes, 121
Neuvitas, 35
New York, 50
Oporto, 28
Rio grande do Sul 60
St. Petersburg, 14
Samarang, 60
Santander, 30 10 brls.
Seville, 308 12
Singapore, 60

Chemicals (*otherwise undescribed*)
Hamburg, 15 c. £24
Beyrout, 4 6
Mersyne, 4 6

Citric Acid—
Corunna, 2 c. £16
Valparaiso, 6 2 q. 55

Copperas—
Souerabaya, 6 t. 19 c. 2 q. £18

Copper Sulphate—
Rouen, 41 t. 16 c. £626
Seville, 2 4 34
Copenhagen, 1 2 2 16
Naples, 30 7 458
Antwerp, 1 1 16
Aleppo, 11 2 9
Bordeaux, 30 4 450
Ghent, 6 1 3 92
M. City, 10 155
Sydney, 3 47
Venice, 10 1 1 156
Lisbon, 4 19 3 75
Barcelona, 17 2 2 253
Constantinople, 1 5 18
Tampico, 5 4 3 73
Tarragona, 14 18 5 228
Algiers, 4 17 72

Disinfectants—
Leghorn, 7 c. 2 q. £12

Glycerine—
Montreal, 1 t. 12 c. 2 q. 50

Gypsum—
Venice, 10 c. 3 q. £32
Genoa, 1 t. 17 6

Manganese Sulphate—
St. Petersburg, 4 cks £20

Magnesium Carbonate—
Cienfuegos, 6 cs.

Magnesium Oxide—
St. Petersburg, 4 cks. £13

Magnesium Sulphate—
Montreal, 10 brls.
Oporto, 10
Rio de Janeiro, 90 kgs.

Manure—
Philadelphia, 5 t. £25

Oxalic Acid—
Rouen, 5 t. 15 c. £140
Copenhagen, 11 2 5

Paint—
Arroyo, 1 ck.
B. Ayres, 10
Cabenda, 2
Calcutta, 285 pkgs. 60 kgs.
Cienfuegos, 2 cks.
Colombo, 2
Galatz, 120
Hamburg, 1 cs.
Havana, 2 cks.
Hong Kong, 2 272 pkgs
Honolulu, 2
Lisbon, 69
Loanda, 2
Mazatalan, 50 kgs.
Monte Video, 25
New Orleans, 200 cks.
N. York, 200
Ponce, 3 8 dms. 1 tc
Porto Alegre, 27 pkgs.
Rio de Janeiro, 20 kgs. 6 brls.
St. John's, Nfld. 250 2 11 ck
Santiago, 1 ck.
Shanghai, 4
Sierra Leone, 70 kgs.
Smyrna, 416 24 dms.
Valparaiso, 1 cs.

Painters' Colours—
Alexandria, 10 cks.

Pitch—
Genoa, 4,972 c.

Potassium Chlorate—
Rotterdam, 3 t.
Copenhagen, 1 10 c.
Gothenburg, 13
Oporto, 8
Lisbon, 19
Genoa, 2
Hamburg, 1
Constantinople, 1
Batoum, 1/4
Stettin, 2
Leghorn, 8
N. York, 5 10
Odessa, 1
Ancona, 8
Bari, 1 6
Boston, 5

Salt—
Addah, 8 t.
Antwerp, 50
Bakana, 40
Baltimore, 50
Belize, 82½
Boston, 276
Buenos Ayres. 50
Cameroons, 87
Chittagong, 2,952
Delagoa Bay, 10
Iceland, 102
Loango, 19
Melbourne, 175
Monte Video, 4 9 c.
Montreal. 611
Mossamedes, 2
Mussera, 5 t.
Old Calabar, 18 19
Rangoon, 2,055
Rio de Janeiro, 1½
Rotterdam, 456
San Francisco, 17
Souris, P. E. I., 400
Sydney, 125 1

Salt Cake—
Lisbon, 10 t. 9 c. £
Baltimore, 29 4
E. London, 124 cks.
E. St. Louis, 124

Saltpetre—
Ceara, 9 c. 3 q. £
Almeria, 1 t.
Cartagena, Sp. 4 2

Sheep Dip—
Monte Video, 3 t. 16 c. £
New Orleans, 9
B. Ayres, 5 10

Soap—
Accra, 20 bxs.
Algoa Bay, 341
Barbadoes, 327

Belize, 306
Benin, 100
Cameroons, 200
Christiania, 170 cs.
Congo, 12
Constantinople, 1
F. London, 3
Havre, 50
Honolulu, 150
Iquique, 1
Lagos, 40
Montreal, 201
N. York, 269 3 cks.
Port Said, 20
Rotterdam, 500 cs.
Salonica, 42
Smyrna, 100
Teneriffe, 304
Trinidad, 261
Valparaiso, 2

Soda Ash—
Baltimore, 120 tcs. 34 cks. 200 bgs.
Beyrout, 100 brls.
Boston, 840 bgs. 60 cks.
Buenos Ayres, 130 cks. 50 brls.
Constantinople, 100
Jaffa, 70
Mitylene, 70
N. York, 63 cks. 48 bgs. 826 tcs
Philadelphia, 357 cs.

Soda Crystals—
Boston, 560 brls.
B. Ayres, 20
Constantinople, 50
Kingston, Jam., 6 cks.
Mitylene, 50 brls
N. York, 140 cks.
St. John's, N. B., 25 brls. 100 kgs.
Sydney, 167

Sodium Bicarbonate—
St. John's, N. B, 750 kgs.
Seville, 275 20 brls.

Sodium Biborate—
Hamburg, 10 c. 1 q. £15
Stettin, 2 t. 3 2 66
B. Ayres, 1 30

Sodium Chlorate—
Hamburg, 15 c. £48
Rotterdam, 2 t. 9 157
Antwerp, 20 kgs.

Sodium Nitrate—
Almeria, 12 t. 8 c 1 q. £111

Sodium Silicate—
Alicante, 16 cks.
Barcelona, 20
Seville. 36 brls.

Sodium Stannate—
Lisbon, 1 ck.

Sodium Sulphate—
Leghorn, 7 brls.

Sulphur—
N. York, 79 t. 4 c. £67

Sulphuric Acid—
Bahia, 15 c. £18

Tallow—
Alexandria. 15 brls.
Carthagena, S. 11 cks.
Huelva, 8

Tar—
Honolulu, 30 brls.

Varnish—
Barcelona, 24 brls.
Iceland, 2

Zinc Chloride—
Bombay, 5 t. £75

GLASGOW.

Week ending May 24th.

Acids—
Calcutta, 4 t. 10 c. £55

Benzol—
Dieppe, 119 brls. 49 pns. £804
Rotterdam, 21 dms. 193

Bichrome—
Christiania, 2 cks. £26

Borax—
Quebec, 5 t. 1 c. £141

Chemicals *(otherwise undescribed)*
Rangoon, 245½ c. £71

Dyestuffs—
Aniline Dyes
Calcutta, 1¾ c. £21
Argols
Quebec, 42¾ c. £30
Extracts
Quebec, 148¾ c. £210

Litharge—
Quebec, 13 t. 7¾ c £200

Manganese—
Rotterdam, 25 c. 3 cks £22

Magnesia—
Port Mahon, £220

Paint—
Rangoon, 5 t. 4½ c. £75
Cuba, 306
Calcutta, 49¼ c. 67

Paraffin Wax—
Port Mahon, 2 t. 11¼ c. £64

Pitch—
Gothenburg, 73 t. 18¾ c. £200
La Rochelle, 365 9 548 5s.
Quebec, 137 3

Potassium Bichromate—
Port Mahon, 865¾ c. £1,412

Soap—
Amsterdam, 1¾ c. £6 7s.

Sodium Bichromate—
Rotterdam, 26 cks. £344

Sulphuric Acid—
Rangoon, 26 t. 3¾ c. £418

Tallow—
Rotterdam, 112½ c. £150

Tar—
Quebec, 12½ t. £27

Tar Oil—
Dieppe, 31 brls. £27

HULL.

Week ending May 21st.

Benzoline—
Ghent, 15 brls.

Bleaching Powder—
Boston, 118 cks.
Riga, 18 20 kgs.
Stettin, 50

Borax—
Christiania, 3 cs.

Caustic Soda—
Bergen, 7 dms.
Helsingfors, 4 cks. 65
Harlingen, 15
Reval, 4
Riga, 660
Wyburg, 17

Chemicals *(otherwise undescribed)*
Antwerp, 2 cks.
Christiania, 31 cs. 18
Copenhagen, 6 25 pkgs.
Gothenburg, 10 1 4 kgs.
Helsingfors, 20 11 pks.
Hamburg, 172 1 kg.
N. York, 60 350
Reval, 100
Rotterdam, 30 25
Riga, 2 175
Stettin, 7
Stockholm, 2
St. Petersburg, 46 5 75
125 dms.
Wyburg, 10 pks.

Cottonseed Oil—
Amsterdam, 161 c.
Antwerp, 600
Bremen, 474
Bergen, 24
Copenhagen, 202
Flushing, 400
Gothenburg, 100
Hamburg, 7,025
Rotterdam, 926
Stettin, 100
Stavanger, 64
Stockholm, 100

Creosote—
Christiania, 10 cks.
Gothenburg, 150

Dyestuffs *(otherwise undescribed)*
Antwerp, 8 cks. 5 dms.
Christiania, 40 bgs.
Dunkirk, 80
Rouen, 2
St. Petersburg, 21 2 cs.

Gypsum—
New York, 40 cks.

Linseed Oil—
Antwerp, 208 c.
Bergen, 211
Christiania, 854
Copenhagen, 50
Christiansand, 34
Drontheim, 86
Helsingfors, 34
Hamburg, 74
Rotterdam, 340

Manure—
Christiania, 2 t.
Ghent, 848 bgs.

Mineral White—
Gothenburg, 30 bgs.
New York, 90 cks.
Stettin, 50

Naphtha—
Ghent, 17 pkgs.

Ochre—
Amsterdam, 14 cks.
Konigsberg, 1

Paint—
St. Petersburg, 1 ck. 1 dn.
Bergen, 1 24

Painters' Colours—
Amsterdam, 1 ck.
Antwerp, 3 cs. 27 cks. 38 pks.
Aalesund, 6
Bremen, 3 cks.
Bergen, 7 14 dms.
Christiania, 1 cs. 6 cks. 124 pkgs.
Copenhagen, 5 cks.
Christiansand, 20 pks.
Drontheim, 20 kgs. 10 cks.
Dunkirk, 2 cks.
Ghent, 17 1 cs.
Gothenburg, 22 12 dms.
Helsingfors, 11
Hamburg, 48 8 cs.
Konigsberg, 30
N. York, 178
Rotterdam, 42 cs. 39 cks. 18 dms. 5 pks. 1 kg.
Riga, 20 cks.
Stettin, 67 75 pks. 15 kgs.
Stockholm, 2 cs.
St. Petersburg, 589 cks.
Wyburg, 1

Pitch—
Antwerp, 744 t.
Dunkirk, 65
N. York, 51

Salt—
Paspebiac, 170 t.

Soap—
Bergen, 25 cs.

Tallow—
Bremen, 3 cks.
Harlingen, 11
Stockholm, 5
Wyburg, 1

Tar—
Bergen, 1 ck.
Christiania, 2
Copenhagen, 6
Helsingfors, 50
Wyburg, 25

Varnish—
Antwerp, 2 cs. 3 cks.
Bergen, 2
Christiania, 2
Copenhagen, 6
Dunkirk, 3
Ghent, 2
Gothenburg, 6 1
Harlingen, 1
Rotterdam, 2

TYNE.

Week ending May 21st.

Alkali—
St. Petersburg, 3 t.
,, 26 10 c.
Rotterdam, 1 11
,, 2 17
Amsterdam, 72 2

Antimony—
St. Petersburg, 50 t.
Hamburg, 5 10 c.
Rotterdam, 5
Copenhagen, 2
Amsterdam, 2

Arsenic—
St. Petersburg, 38 t. 11 c.
,, 15 6

Barytes Carbonate—
St. Petersburg, 22 t.
Hamburg, 100
Rouen, 15

Bleaching Powder—
St. Petersburg, 568 t. 19 c.
Antwerp, 26 4
Hamburg, 4 17
St. Petersburg, 352 5
Christiania, 8
,, 15 4
Rotterdam, 33 11
Copenhagen, 10 2
Amsterdam, 24 17
Rouen, 1 1
Danzig, 41 9
Montreal, 52
Lisbon, 10 4

Caustic Soda—
St. Petersburg, 129 t. 13 c.
Hamburg, 12 3
St. Petersburg, 24 12
Malta, 94 18
Stockholm, 10 3
Rouen, 2 18
Montreal. 80 18

Copperas—
Copenhagen, 1 t.

Linseed Oil—
Malta, 1 t. 15 c.

Litharge—
St. Petersburg, 5 t. 7 c.
Hamburg, 1 1
Stockholm, 2 19
Copenhagen, 1 7
Rouen, 9 19
Montreal, 38 5

Manganese—
Bilbao, 43 t. 10 c.

Magnesia—
Antwerp, 1 c.

Magnesium Carbonate—
Rouen, 1 c.

Paint—
Rotterdam, 1 c.

Painters' Colours—
Christiania, 7 c.

Salammoniac—
Danzig, 1 t. 12 c.

Soap—
Ergasteria, 2 c.

Soda—
Malta, 5 t. 6 c.
Stockholm, 5 7
Amsterdam, 28 15

Soda Ash—
Christiania, 19 t. 19 c.
Stockholm, 15 4
Danzig, 10 5

Sodium Hyposulphite—
Christiania, 10 c.
Rotterdam, 5 t. 6
Montreal, 7 10

Sodium Sulphate—
Christiania, 5 t. 2 c.

Sulphur—
Christiania, 50 t.
,, 25
Rotterdam, 10

Superphosphate—
Laurvig, 1 t.

Tallow—
Rotterdam, 1 t. 3 c.

Tar—
Arendal 6 t.

White Lead—
St. Petersburg, 9 t. 11 c.

GOOLE.

Week ending May 11th.

Alkali—
Dunkirk, 30 drs.

Benzol—
Rotterdam, 20 cks.

Bleaching Powder—
Dunkirk, 4 cks.

Chemicals *(otherwise undescribed)*
Hamburg, 30 cks.

Dyestuffs *(otherwise undescribed.)*
Antwerp, 3 cks. 4 drs.
Boulogne, 18 2 cs.
Ghent, 2 drs.

Manure—
Boulogne, 213 bgs.
Bruges, 288
Ghent, 200

Pitch—
Antwerp, 489 t.
Dunkirk, 75

GRIMSBY.

Week ending May 14th.

Chemicals *(otherwise undescribed)*
Dieppe, 100 bott.
Hamburg, 20 4 cs. 83 cks.

Naphtha—
Dieppe, 54 cks.

PRICES CURRENT.

WEDNESDAY, June 1st, 18

PREPARED BY HIGGINBOTTOM AND CO., 116, PORTLAND STREET, MANCHESTER.

The values stated are F.O.R. *at maker's works, or at usual ports of shipment in U.K. The price in different localities may v*

	£	s.	d.
Acids:—			
Acetic, 25 % and 40 % .. .. per cwt.	7/- & 11/-		
,, Glacial .. .. ,,	50/-		
Arsenic S.G., 2000° .. .. ,,	0	13	6
Fluoric .. .. per lb.	0	0	3¾
Muriatic (Tower Salts), 30° Tw. .. .. .. per bottle	0	0	10
,, (Cylinder), 30° Tw. .. .. ,,	0	3	0
Nitric 80° Tw. .. .. per lb.	0	0	2¼
Nitrous .. .. ,,	0	0	1¾
Oxalic .. .. nett	,,	0	0	3
Phosphoric, 1750° .. .. ,,	0	1	2½
Picric .. .. ,,	0	0	10¼
Sulphuric (fuming 50 %) .. .. per ton	15	10	0
,, (monohydrate) .. .. ,,	5	10	0
,, (Pyrites, 168°) .. .. ,,	3	5	0
,, (,, 150°) .. .. ,,	1	5	0
,, (free from arsenic, 145°) .. .. .. ,,	1	7	6
Sulphurous (solution) .. .. ,,	2	15	0
Tannic (pure) .. .. per lb.	0	1	2
Tartaric .. .. ,,	0	0	11¾
Arsenic, white powdered .. .. nett per ton	11	10	0
Alum (loose lump) .. .. ,,	5	5	0
Alumina Sulphate (pure) .. .. ,,	5	0	0
,, ,, (medium qualities) .. .. .. ,,	4	15	0
Aluminium .. .. per lb. 2s. 8d. to	0	3	2
Ammonia, ·880=28° .. .. per lb.	0	0	3
,, =24° .. .. ,,	0	0	1¾
,, Carbonate .. .. nett	,,	0	0	3¼
,, Muriate .. .. per ton	21	0	0
,, ,, (sal-ammoniac) 1st & 2nd .. per cwt.	35/- & 33/-		
,, Nitrate .. .. per ton	40	0	0
,, Phosphate .. .. per lb.	0	0	10½
,, Sulphate (grey) London .. .. .. per ton	9	17	6
,, ,, (grey) Hull .. .. ,,	9	15	0
Aniline Oil (pure) .. .. per lb.	0	0	6¾
Aniline Salt ,, ... ,,	0	0	6¼
Antimony .. .. per ton	45	10	0
,, (tartar emetic) .. .. per lb.	0	1	0
,, (golden sulphide) .. .. ,,	0	0	10
Barium Chloride .. .. per ton	7	10	0
,, Carbonate (native) .. .. ,,	3	10	0
,, Sulphate (native levigated) .. .. .. ,,	45/- to 75/-		
Bleaching Powder, 35 % .. .. nett	,,	7	10	0
,, Liquor, 7 % .. .. ,,	2	10	0
Bisulphide of Carbon .. .. ,,	11	15	0
Chromium Acetate (crystal) .. .. per lb.	0	0	6
Calcium Chloride .. .. per ton	2	5	0
China Clay (at Runcorn) in bulk .. .. .. ,,	17/6 to 35/-		
Coal Tar Dyes:—			
Alizarine (artificial) 20 % .. .. per lb.	0	0	8¾
Magenta .. .. ,,	0	3	9
Coal Tar Products			
Anthracene, 30 % A, f.o.b. London .. per unit per cwt.	0	0	10½
Benzol, 90 % nominal .. .. .. per gallon	0	1	10
,, 50/90 ,, ... ,,	0	1	5
Carbolic Acid (crystallised 40°) .. .. .. per lb.	0	0	4⅞
,, (crude 60°) .. .. per gallon	0	1	2
Creosote (ordinary) .. .. ,,	0	0	1
,, (filtered for Lucigen light) .. .. ,,	0	0	2
Crude Naphtha 30 % @ 120° C. .. .. .. ,,	0	0	9
Grease Oils, 22° Tw. .. .. per ton	2	2	0
Pitch, f.o.b. Liverpool or Garston .. .. .. ,,	1	8	0
Solvent Naphtha, 90 % at 160° .. .. .. per gallon	0	0	11
Coke-oven Oils (crude) .. .. ,,	0	0	3
Copper .. .. per ton	46	3	9
,, Sulphate .. .. ,,	15	15	0
,, Oxide (copper scales) .. .. ,,	45	0	0
Glycerine (crude) .. .. ,,	13	0	0
,, (distilled S.G. 1250°) .. .. ,,	45	0	0
Iodine .. .. nett, per oz.	0	0	9
Iron Sulphate (copperas) .. .. per ton	1	12	6
,, Sulphide (antimony slag) .. .. ,,	2	0	0
Lead (sheet) for cash .. .. ,,	12	0	0
,, Litharge Flake (ex ship) .. .. ,,	14	0	0
,, Acetate (white ,,) .. .. ,,	25	10	0
,, ,, (brown ,,) .. .. ,,	17	5	0
,, Carbonate (white lead) pure .. .. .. ,,	20	0	0
Nitrate .. .. ,,	20	0	0

	£	s.
Lime, Acetate (brown) .. .. per ton	5	17
,, ,, (grey) .. .. ,,	10	15
Magnesium (ribbon and wire) .. .. per oz.	0	2
,, Chloride (ex ship) .. .. per ton	2	7
,, Carbonate .. .. per cwt.	1	17
,, Hydrate .. .. per ton.	17	0
,, Sulphate (Epsom Salts) .. .. .. per ton	2	19
Manganese, Sulphate .. .. ,,	17	15
,, Borate .. .. per cwt.	2	12
,, Ore, 70 % .. .. per ton	4	5
Methylated Spirit, 61° O.P. .. .. per gallon	0	2
Naphtha (Wood), Solvent .. .. ,,	0	4
,, ,, Miscible, 60° O.P. .. .. .. ,,	0	4
Oils:—		
Cotton-seed .. .. per ton	19	10
Linseed .. .. ,,	20	0
Lubricating, Scotch, 890°—895° .. .. .. ,,	7	5
Petroleum, Russian .. .. per gallon	0	0
,, American .. .. ,,	0	0
Potassium (metal) .. .. per oz.	0	3
,, Bichromate .. .. nett	per lb.	0	0
,, Carbonate, 90% (ex ship) .. .. .. per ton	18	0
,, Chlorate .. .. per lb.	0	0
,, Cyanide, 98% .. .. ,,	0	2
,, Hydrate (Caustic Potash) 80/85 % .. per ton	22	10
,, ,, (Caustic Potash) 75/80 % .. ,,	21	0
,, ,, (Caustic Potash) 70/75 % .. ,,	20	15
,, Nitrate (refined) .. .. per cwt.	1	2
,, Permanganate .. .. per cwt.	3	10
,, Prussiate Yellow .. .. per lb.	0	0
,, Sulphate, 90 % (ex ship) .. .. .. per ton	9	15
,, Muriate, 80 % (do.) .. .. .. ,,	7	17
Silver (metal) .. .. per oz.	0	3
,, Nitrate .. .. ,,	0	2
Sodium (metal) .. .. per lb.	0	3
,, Carb. (refined Soda-ash) 48 % .. nett per ton	6	2
,, ,, (Caustic Soda-ash) 48 % . ,, ,,	5	5
,, ,, (Carb. Soda-ash) 48% .. .. ,, ,,	5	7
,, ,, (Carb. Soda-ash) 58 % .. .. ,, ,,	6	5
,, ,, (Soda Crystals) .. .. .. ,, ,,	3	9
,, Acetate (ex-ship) .. .. ,,	16	5
,, Arseniate, 45 % .. .. ,,	10	10
,, Chlorate .. .. per lb.	0	0
,, Borate (Borax) .. .. nett, per ton.	29	0
,, Bichromate .. .. ,, per lb.	0	0
,, Hydrate (77 % Caustic Soda) (f.o.b.) nett pr. ton (10 ton lots)	11	10
,, ,, (74 % Caustic Soda) ,, ,, ,, (10 ton lots)	11	5
,, ,, (70 % Caustic Soda) ,, ,, ,, (10 ton lots)	10	5
,, ,, (60 % Caustic Soda) .. ,, ,, (10 ton lots)	9	2
,, ,, (60 % Caustic Soda, cream) (f.o.b.) ,, (10 ton lots)	8	17
,, Bicarbonate .. .. ,,	6	12
,, Hyposulphite .. .. ,,	7	15
,, Manganate, 25% .. .. ,,	11	10
,, Nitrate (95 %) ex-ship Liverpool .. .. per cwt.	0	8
,, Nitrite, 98 % .. .. per ton	30	0
,, Phosphate .. .. ,,	15	10
,, Prussiate .. .. per lb.	0	0
,, Silicate (glass) .. .. per ton	5	7
,, ,, (liquid, 100° Tw.) .. .. .. ,,	4	5
,, Stannate, 40 % .. .. per cwt.	3	5
,, Sulphate (Salt-cake) .. .. per ton.	1	16
,, ,, (Glauber's Salts) .. .. ,,	1	15
,, Sulphide .. .. ,,	7	15
,, Sulphite .. .. ,,	6	12
Strontium Hydrate, 100% .. .. ,,	8	10
Sulphocyanide Ammonium, 95 % .. .. per lb.	0	0
,, Barium, 95 % .. .. ,,	0	0
,, Potassium .. .. ,,	0	0
Sulphur (Flowers) .. .. per ton.	8	0
,, (Roll Brimstone) .. .. ,,	6	5
,, Brimstone: Best Quality (nominal) .. .. ,,	5	0
Superphosphate of Lime (26 %) .. .. ,,	2	7
Tallow .. .. ,,	27	0
Tin (English Ingots) .. .. ,,	101	0
,, Crystals .. .. per lb.	0	0
Zinc (Spelter) .. .. per ton	22	10
,, Chloride (solution, 96° Tw.) .. .. .. ,,	6	10

THE

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THE ETHICS OF SEWAGE TREATMENT.

IT is not our intention in the following remarks to philosophise upon the way in which sewage should be treated, or to specify any ideal method of purification or disposal. Our object rather is to emphasise one or two points which have come within our cognisance of late, which tend to show that after laying aside all considerations as to the present state of practical perfection, there are incongruities even in the theoretical affirmations which from time to time have been made by those who consider they have solved the sewage difficulty on paper if not in practice.

It is to the consideration of some of these incompatible pronouncements, therefore, that we shall for the present devote our attention.

In our columns last week we made reference to the incidence of several prosecutions against chemical manufacturers in the Midlands for turning their waste pickle from galvanising works into the sewers of the Corporation.

This, according to the law, anyone will admit is an illegality, and proceedings would naturally follow to restrain manufacturers from so doing.

So far so good, but the argument which was put forward as the *raison d'être* of these prosecutions bears an important lesson to those who have to do with the purification of sewage.

The objection was that the presence of the pickle lead to complications and difficulties in dealing with the sewage.

Now the number of patents which have been taken out for the treatment of sewage with iron salts are legion, and amongst these are many which advocate the use of ferrous salts, which by the bye form the principle ingredients in waste pickle. Such processes have even been tried by Corporations, who are desirous of testing many systems in order to ensure their final selection being the fittest; so that the very compounds which some have gone to special expense to experiment with, are rejected when within the reach of others for nothing.

There is another consideration, however. It is an exceptional sewage which is not alkaline. Take, for instance, that of Salford, which is largely composed of the waste waters from dyeing, bleaching, and copper engraving works, where considerable quantities of acid are employed and turned to waste.

The alkalinity of the Salford sewage is found to be twenty-five parts per hundred thousand. This alkalinity being due to the ammonia, lime, and other salts occurring in the sewage.

Now, if the total alkalinity is calculated out for the volume of sewage which has to be dealt with daily, it will be found that something like twenty tons of vitriol would be required per diem to neutralize the Salford sewage.

Knowing this, it is not a very difficult matter to make a tolerably close approximation of the amount of acid which

would be required to neutralize the sewage of a town like Wolverhampton, where the prosecutions alluded to took place, seeing the population is rather more than one-third that of Salford. On the actual figures it gives in round numbers seven tons a day. Can it be that acid finds its way into the sewers to this extent, when apparently the number of acid samples detected passing from one of the largest works during some months amounted to three?

Just at present many corporations have to impose heavy rates to meet the expenses of treating sewage, and most people are content to pay such rates even for experimental purposes only, in the belief that in the long run they will have secured the most efficient treatment by their expenditure. But there seem to be considerable discrepancies between the methods; where in one case money is spent to procure the addition of certain chemicals, in another their presence is precluded.

The actions are inexplicably at variance, and evidently there is much difference of opinion as to what is beneficial and what not, yet someone should know.

It is unfortunate that those so closely connected with this matter should follow such conflicting courses, but after all, it may ultimately effect good, for as the saying goes "when rogues fall out just men get their own," and such may be the case when even those who can prove their *bonâ fides*, disagree.

At any rate it is enough to show that there is a good deal of misdirected energy expended somewhere, an expenditure which takes money, money which is provided by ratepayers, who may be disposed to take exception to their money being spent upon proceedings which are antagonistic to the methods adopted by their neighbours, and so it is to be hoped, lead, in the future, to the outlay of less money, and to the accomplishment of more definite benefit in return for the same.

THE ANALYSIS OF WHITE LEAD.

TOUCHING this subject, Mr. J. F. Liversedge, in an article to a contemporary, says: Having to estimate the value of some samples of white lead ground in oil, and not finding a suitable process in text-book, I devised the following, which works very well:—

Removal of Oil.—Shake about 10 grammes with benzoline in a corked test-tube, let it stand a short time to settle, decant off the liquid, add more benzoline, shake, let settle, decant, and throw the residue on to filter-paper and allow it to become air-dry. If it is required

To Estimate the Oil, this may be done by triturating 5 grammes of the sample in a glazed porcelain mortar with redistilled benzoline (leaving no residue at 100° C.), and filtering through paper into a weighed glass dish with straight sides; care being taken to wash all oil from the mortar and filter-paper with the solvent. The benzoline is gently evaporated, and the residue dried a short time in the water-oven and weighed. Carbon disulphide answers nearly as well as benzoline, but ether is quite unsuitable, as the white lead does not deposit from it in many hours, and readily passes through a filter.

Estimation of Impurities.—Weigh one or two grammes of the dry powder, heat with dilute acetic acid, filter through a weighed filter, wash the residue on to the filter, wash, dry at 100° C., and weigh.

Estimation of Lead—Add to the filtrate, which should not be too dilute, a slight excess of dilute sulphuric acid (5 c.c. of normal acid to each gramme is sufficient), and twice its volume of methylated spirit; dry at 100° C., remove the sulphate of lead to black glazed paper, ignite the filter-paper in weighed porcelain crucible, add one drop of nitric acid and one drop of sulphuric acid, gently evaporate the acid, add the precipitate, ignite at a moderate heat, and weigh. Sulphate of lead multiplied by ·8523 = ($2PbCO_3$ + PbH_2O_2), which is the usual composition of white lead.

Qualitative Testing.—If the sample is suspected to contain oxide of zinc, the filtrate from the sulphate of lead should be tested by adding ammonia and ammonium sulphide. If barium carbonate (witherite) or calcium carbonate is present (the presence of either appears to be unusual), the precipitated sulphate of lead will not be pure. A ready way to test for them is to heat some of the dry powder with dilute nitric acid, add ammonium chloride in excess, decant from the precipitated $PbCl_2$, etc., add ammonia in excess, decant, add ammonium sulphide, and filter; boil the filtrate with ammonium carbonate.

Examples.—The following weights were obtained from 2 grammes of the sample, after removal of oil:—

No. 1, Residue	·4045,	sulphate of lead	1·8480	grammes
,, 2, ,,	·6025,	,, ,,	1·6225	,,
,, 3, ,,	·6395,	,, ,,	1·5065	,,
,, 4, ,,	·2160,	,, ,,	2·0660	,,
,, 5, ,,	·2225,	,, ,,	2·0585	,,

(Calculated to parts per cent.)

Number	1	2	3	4	5
Price	22s.	20s.	18s.	18s.	
$2PbCO_3 + PbH_2O_2$	78·75	69·14	64·20	88·04	87·72
Impurities	20·22	30·12	34·47	10·80	11·12
Moisture and loss	1·03	0·74	1·33	1·16	1·16

The samples only contained traces of lime soluble in acid. It will be observed that price is no criterion of quality.

Dry Method.—In Atfield's "Chemistry" a method is given for estimation of lead without removal of oil; but Professor Atfield says "that the process is too erratic for general use."

THE HISTORY OF COMMERCIAL FERTILIZERS.

THE Bulletin of the New York Agricultural Experiment Station recently published an interesting article on this subject, from which the following *resumé* is taken:—

The history of fertilizers practically dates back to the time when bones were first applied to the soil, and their value as a fertilizer was first recognised. Fertilizing with bones was first practised in England. Probably the first instance of their extensive application was in the case of the farmers living near Sheffield, who applied to the land the bone and ivory clippings, which were waste products of the knife and button factories of Sheffield. These clippings amounted to about eight hundred tons a year, and were regarded, until about a century ago, as a nuisance, the disposal of which was a serious problem to the manufacturers.

In 1774 the agricultural use of bones was publicly recommended by Hunter, and successful experiments were made with bone dust.

About 1814 Alexander von Humboldt called public attention to the use of guano as a fertilizer, which he had seen used by the natives of Peru.

About 1817 the first superphosphate is believed to have been made by Sir James Murray.

It was not until after 1820 that the use of phosphates assumed any great commercial or agricultural importance, and not even then was it appreciated what gave bones their value as fertilizers.

About 1830 Peruvian guano began to be imported into Europe as a fertilizer, and a few years after, into the United States, especially at the south.

About 1840 Liebig published the results of his researches and suggested that plants must obtain materials for their growth from the soil as well as from the air and water, which alone were previously supposed to furnish plant food; and, hence, that the proper life of a plant can be benefited by furnishing those elements that are necessary. It was shown that the phosphate of lime in bones gave them their value, and that, by dissolving bones with sulphuric acid, they were made much more effective. The demand for bones then outran the supply. Other sources were looked for, and in 1843 a new source of phosphate of lime was found in Spain, consisting of a rock which contained considerable amounts of phosphoric acid. On trial, this rock was found to be a substitute for bone.

In the United States, farmers first used bones about 1790. The first bone mill was built about 1830, and superphosphates were first used in 1851. The discovery of the so-called South Carolina rock was a great boon to those using commercial fertilizers, as this was found to take the place of bones.

The investigation based upon Liebig's theory showed that other elements in addition to phosphorus must be used to secure the best results, and, gradually, commercial fertilizers containing other elements came to be manufactured and offered for sale.

PRINCIPLES UNDERLYING THE USE OF FERTILIZERS.

Until fifty years ago, agriculture was without a scientific working basis. To the investigations of the illustrious German chemist, Justus von Liebig, we largely owe the advances that have been made in agricultural methods during the last half century. The following four

laws, which form the foundation of modern agricultural practice, were fully established by Liebig :—

1. "A soil can be termed fertile only when it contains all the materials requisite for the nutrition of plants in the required quantity and in the proper form."

2. "With every crop a portion of these ingredients is removed. A part of this portion is again added from the inexhaustible store of the atmosphere; another part, however, is lost for ever if not replaced by man."

3. "The fertility of the soil remains unchanged if all the ingredients of a crop were given back to the land. Such a restitution is effected by manure."

4. "The manure produed in the course of husbandry is not sufficient to maintain permanently the fertility of a farm; it lacks the constituents which are annually exported in the shape of grain, hay, milk and live stock."

These four laws of Liebig contain a clear statement of the principles underlying the use of fertilizers; but to understand their meaning with satisfactory clearness, we must know something more in detail about the following subjects :—

(*a.*) The constituents and food materials of plants.

(*b.*) The constituents of soils.

(*c.*) The relations of soils and plants.

These subjects will now be considered in the above order :—

THE CONSTITUENTS AND FOOD MATERIALS OF PLANTS.

To chemical analysis we owe all that we know about what plants contain or are made of. Less than eighty years ago not a single vegetable substance had been accurately analysed; and although in the thirty years following much was learned about the different elements contained in plants, it was not until after the investigations of Liebig that our knowledge of the chemistry of plants progressed with any satisfactory degree of rapidity.

ELEMENTARY COMPOSITION OF PLANTS.

When we state what elements any substance contains, we give its elementary composition. For example, sugar contains the elements, carbon, hydrogen, and oxygen; this is a statement of the elementary composition of sugar. So, when we state what elements a plant contains, we give its elementary composition or analysis. The term ultimate composition means the same as elementary composition. We will now consider the elementary composition of plants.

The exact number of different kinds of plants growing on the earth has never been definitely ascertained; but the number probably exceeds 200,000. Of this large number, only a few have been subjected to careful chemical analysis, and yet, so uniform in all its great variety are Nature's methods of working and building, that we can quite safely say that, so far as the elementary composition of plants is concerned, little remains to be learned. Chemical analysis shows that, of the seventy elements known to exist, only fourteen are essential to produce all the different forms of vegetable life.

While all plants contain certain chemical compounds, such as cellulose, albuminoids, etc., it may be that each plant contains, in some one or all of its parts, one or more chemical compounds peculiar to itself, so that there may be as many distinct chemical compounds in the vegetable kingdom as there are different species of plants. This, of course, cannot be absolutely known until all plants in existence have been carefully analysed; but, whether the number of different chemical compounds in the vegetable kingdom be a few thousand or a few hundred thousand, we know that they are almost entirely made up of fourteen elements, and these, therefore, form the chemical alphabet of the vegetable kingdom, all the different vegetable compounds, like words from letters, being formed by the union of two or more of these elements.

The fourteen elements which are regarded as being necessary to the perfect growth and development of every plant are the following: Carbon, hydrogen, nitrogen, oxygen, phosphorus, sulphur, chlorine, silicon, calcium, iron, magnesium, manganese, potassium and sodium. The element fluorine is of frequent occurrence in very small quantities, and the following elements are of rare or doubtful occurrence: Aluminium, barium, bromine, cobalt, copper, iodine, lead, lithium, nickel, rubidium, tin, titanium and zinc, but their occurrence is a matter of curiosity rather than of practical importance, for, unlike the fourteen named above, they seem in no way to be necessary to plant life.

AIR-DERIVED AND SOIL-DERIVED ELEMENTS.

The elements that are necessary to the growth of plants may be divided into two quite distinct classes, which have important and marked differences. These two classes are: 1. Air-derived or organic elements. 2. Soil-derived or inorganic elements.

AIR-DERIVED ELEMENTS.	SOIL-DERIVED ELEMENTS.
Carbon.	Phosphorus.
Hydrogen.	Sulphur.
Oxygen.	Chlorine.
Nitrogen.	Silicon.
	Calcium.
	Iron.
	Potassium.
	Sodium.
	Magnesium.
	Manganese.

It is usual among writers on agricultural chemistry to call these classes organic and inorganic elements, but this use of these words is extremely inaccurate; for any element may be either organic or inorganic, according as it is or is not a part or product of an organized body. Oxygen, as it exists in the air, is inorganic matter; but when, through vital processes, it becomes part of an animal or plant, it is organic.

These two classes of elements differ in three important particulars, as follows :—

First.—The elements of the first class are derived exclusively from the air, either directly or indirectly; while those of the second class come exclusively from the soil.

Second.—Air-derived elements disappear, for the most part, in the form of gases, when a plant is burned; while the soil-derived elements, usually the smaller part, are left in the form of a residue or ash, which further heating will not have any effect upon. Some carbon and oxygen and nitrogen are always found in the ash, while slight quantities of chlorine, sulphur and phosphorus are apt to be driven off by heating. The two classes of elements are, therefore, not so sharply defined in this regard as they are in respect to the sources from which they come.

Third.—These two classes differ very noticeably in regard to the quantities in which they are present in plants. Thus, the air-derived elements constitute, at least, ninety-five per cent. of the whole vegetable kingdom, while the soil-derived elements occur in small quantities, varying from a fraction of one per cent. up to ten per cent., or even more in some cases. Because the soil-derived elements occur in so much smaller quantity, it does not follow that their presence is of less importance; in their absence, vegetation would disappear.

We will now consider each of these elements in order, and mention briefly some of the more important characteristics of each; but, before doing this, it is desired to explain the meaning of two or three chemical terms which we shall have occasion to use.

ACID-FORMING ELEMENTS AND METALS.

Of the fourteen elements which are found in plants, some are spoken of as non-metallic elements or acid-forming elements, because, in certain combinations, these elements form well-known acids. The other elements are known as metallic elements or metals.

ACID-FORMING ELEMENTS.	METALS.
Carbon.	Calcium.
Hydrogen.	Potassium.
Oxygen.	Sodium.
Nitrogen.	Iron.
Phosphorus.	Magnesium.
Sulphur.	Manganese.
Chlorine.	
Silicon.	

ACIDS AND SALTS.

An acid is a compound containing an acid-forming element combined with hydrogen and oxygen, or, in some cases, with hydrogen alone. The following examples will serve to illustrate :—

Nitrogen, hydrogen, and oxygen form nitric acid; phosphorus, hydrogen and oxygen form phosphoric acid; sulphur, hydrogen, and oxygen form sulphuric acid; chlorine and hydrogen form hydrochloric acid. The common name of sulphuric acid is oil of vitriol; the common name of hydrochloric acid is muriatic acid.

A salt is a compound formed by putting a metal in the place of the hydrogen of an acid; that is, an acid differs from a salt simply in having a metal where the acid has hydrogen. Every acid has a salt corresponding to it. For example, as stated above, nitric acid consists of nitrogen, hydrogen, and oxygen. Now, if we put the metal potassium in the place of hydrogen, we have a compound containing nitrogen, potassium (in place of hydrogen) and oxygen. This compound is the potassium salt of nitric acid, and is called potassium nitrate, or, sometimes, nitrate of potash. Again, phosphoric acid consists of phosphorus, hydrogen and oxygen; in place of hydrogen, put one of the metals, as calcium, and we have a compound containing phosphorus, calcium (in place of hydrogen) and oxygen, which is the calcium salt of phosphoric acid, and is called calcium phosphate, or, sometimes, phosphate of lime. Similarly, if a metal, as magnesium, is put in the place of the hydrogen

of sulphuric acid, we have the magnesium salt of sulphuric acid, or magnesium sulphate familiar as Epsom salts. If in hydrochloric acid we put some metal, as sodium, in place of the hydrogen, we have a compound consisting of sodium and chlorine, which is the sodium salt of hydrochloric acid, and is called sodium chloride, sometimes muriate of soda, familiar to us as common salt.

The word "salt" as used in chemistry applies to a great number of compounds, and many of the substances we have to deal with in speaking of fertilizers are chemical salts, that is, substances formed by putting some metal in place of the hydrogen of some acid.

(To be continued.)

ELECTRICAL DIALYSIS.

By H N. Warren.

During some experiments on reduction by means of nascent hydrogen, I have lately endeavoured to expose the same to an electro-dialytic action, for the purpose of converting one substance into an allied form by the aid of the nascent hydrogen thus evolved, and at the same time to effect a separation by means of dialysis. The apparatus made use of consists of an ordinary tubulated phial, from which the bottom had been separated, and replaced by a porous diaphgram, the further end being furnished with a perforated cork, through which was inserted a glass tube terminating in a point, and containing metallic mercury in direct union with a platinum wire fused into the glass and projecting into the mercury. The extremity of the wire is attached to a platinum plate dipping into the second tube, and intended to receive the solution to be thus acted upon. The decomposing tube itself is supported in a third vessel, containing an aqueous solution of whatever substance is desired to combine with the one dialysed. The same vessel also contains a porous pot, partially filled with ammonium chloride, into which a zinc rod has been introduced, the extremity being furnished with a binding screw, and in connection with the positive pole of a constant battery, the small tube containing the mercury being likewise connected to the negative of the same. Before using the apparatus, care should be taken to see that the solutions contained in their respective tubes are exactly the same height as regards their aqueous layers, otherwise secondary actions present themselves and either considerably retard the action or render it useless. The apparatus being now in order, and connection having been maintained by the aid of a large Bunsen cell, employing acidulated water for the decomposing or inner cell, large volumes of hydrogen gas are at once evolved from the platinum plate; and if now the acidulated water is transferred to the outer cell, and replaced by a solution of cupric sulphate in admixture with one of sodium chloride, a violent evolution of gas as before takes place which is, however, quickly subdued, by reason of the active hydrogen which speedily decolourises the solution, the product being metallic copper, which attaches itself to the platinum electrode, while sodium sulphate is formed by mutual decomposition, which being a crystalloid rapidly dialyses into the outer cell.

For organic tests an alcoholic solution of ricinoleic acid was taken, the outer cell containing sodium carbonate, the oleic acid becoming converted into stearic acid, and combining with the Na_2CO_3 forming sodium stearate.

CHEMICAL PRONUNCIATION.

The advisability of adopting a universal and recognised way of spelling and pronouncing the names of various chemical compounds has been pretty freely discussed during the past four years, more particularly in America. In order to ventilate this subject the American Association for the Advancement of Science issued in 1889, 1890, and 1891 preliminary reports to indicate the reasons upon which the changes which had been suggested were based. The replies to these reports have been carefully digested, the outcome of their discussion being the report which we are about to refer to.

There is no great difference between the way in which the elements are spelt and pronounced in the new code and the old, but what changes there are will certainly be looked upon somewhat critically by many on this side of the water.

Sulphur is the most striking change, it being spelt "sulfur" by itself, and in all its compounds, such as "sulfuric acid." The final "e" in the halogens is also abandoned, reading "chlorin" and "bromin."

The restriction of the termination "ic," however, for those metals which have a different valency only is a suggestion which avoids a good deal of confusion by strengthening the contrast with the "ous" termination. Aluminium, however, is spelt "aluminum."

Two of the most striking changes are the omission of the "e" in the words ending in "ide" and "ine," so that we have in consequence "oxid," "sulfid," "iodid," and, again, chlorine and quinine as "chlorin" and "quinin."

There are many words, however, for which the use of synonyms is to be recommended, illustrative of which we append the following list, the suggestion regarding qualitative and quantitative being very opportune.

A LIST OF WORDS WHOSE USE SHOULD BE AVOIDED IN FAVOUR OF THE ACCOMPANYING SYNONYMS.

For	*Use*
beryllium	glucinum
niobium	columbium
thein	caffein
titer (n.)	strength or standard
titer (v.)	titrate
monovalent	univalent
divalent, etc.	bivalent, etc.
quantivalence	valence
sodic, calcic, zincic, nickelic, etc., chlorid, etc.	sodium, calcium, zinc, nickel, etc.
arsenetted hydrogen	arsin
antimonetted hydrogen	stibin
phosphoretted hydrogen	phosphin
sulfuretted hydrogen, etc.	hydrogen sulfid, etc.
alkylogens	alkylhaloids
benzol	benzene
toluol, etc.	toluene, etc.
pyrocatechin	catechol
resorcin	resorcinol
orcin	orcinol
glycerin	glycerol
erythrite, erythroglucin, eryglucin, erythromannite, phycite	erythrol
mannite	mannitol
dulcite	dulcitol
sorbite	sorbitol
furfurol	furfuraldehyde
fucusol	fucusaldehyde
anisol	methyl phenate
phenetol	ethyl phenate
anethol	methyl allyl-phenol

It has been suggested that the words qualitative and quantitative could be advantageously replaced by qualitive and quantitive, deriving the terms from the Latin adjectives instead of the nouns, as has been done in the case of rotary instead of rotatory, agriculturist instead of agriculturalist, etc. The Section regards this change as eminently desirable, but on account of the extended use of the words outside of chemistry, delays action until the opinions of those in allied branches have been obtained.

THE PREPARATION OF CELLULOSE FROM WOOD.

The object of the following process is to obtain cellulose in large quantities, quickly, and cheaper than at present

The idea is also to use up waste wood, such as wood wool, shavings from planing, or boring such woods as fir, poplar, beech, and birch.

The preparation of cellulose by this process is so simple that each papermaker ought to be capable of easily producing enough cellulose by this method to meet his requirements; besides the product has a very long fibre, is white, free from resinous matter and knots. It is also ready for manufacture into all kinds of writing and printing papers. The *modus operandi* is as follows:—250 kilos. of shavings, or 300 kilos of wood chips and cuttings, which ought not to exceed five centimetres in thickness, are first taken, and on to this a lye of ammonia, containing 100 kilos. of ammonia in 100 litres of water which is equivalent to a strength of about 14° to 15° B.

This lye, during the process of cooking, has the power of dissolving the incrusting substances surrounding the wood fibres, and similar resinous compounds. As well as accomplishing this loosening of the fibres, it does not weaken or attack them at all. The mixture of lye and wood is placed in a suitable boiler, and in order to effect a thorough saturation of the wood, it is kept at a steady heat. The heat is increased until the pressure is about two atmospheres, at which the mixture is kept for about eight hours. The wood is then entirely removed, the dark lye which is left serving to treat fresh wood in another boiling.

The wood is then washed in a cylindrical scrubber until the wash water runs away clear. The wood is next passed through laminated cylinders in order to dry it, care being taken not to crush the wood,

The same result is accomplished by beating the wood with flat hammers on a plain surface. The loosened mass is then turned into an enamelled vessel and covered with a solution obtained by mixing one litre of chloride of lime with six litres of water and allowing the mixture to stand for twelve hours in a dark place. The liquor should now test 10°B., and should be filtered to render it clear. The wood is left in this solution in a dark place and protected as much as possible from the air for about eight hours, during which time a complete disintegration and bleaching of the fibre is attained.

The mass should then be snowy white and is washed until free from chloride, when the pulp is ready for use in the manufacture of paper and other purposes. The bleach can be used over again for the treatment of further quantities of wood.—*Revue de Chemie.*

THE TRADE IN OLIVE OIL AT MARSEILLES IN 1891.

THE first olives of the season have just made their appearance at Marseilles; these are gathered first to be pounded and pickled, and are usually of good quality. It is to be hoped that the crop this year in the Bouches-du-Rhône will be good, since the late and abundant rains have been very favourable to the development of the fruit.

It will be of interest to tabulate the quantities of olive oil which have been imported at Marseilles during the first nine months of 1891, the numbers being greater than those for the corresponding period of the preceding year.

From January 1st to September 30th, 1890, only 12,489,655 kilos. of olive oil were imported; 9,486,125 kilos. of which were again sold, whilst for the same period of 1891, 14,617,634 kilos. were received and 12,546,063 sold. Appended are the details of the amounts supplied in 1891, classified under the countries producing them:—

Source.	First nine months of 1891.
Spain	684,496 kilos.
Italy	3,063,777 ,,
Tunis	7,575,280 ,,
Algeria	1,693,560 ,,
Other Countries	1,600,521 ,,
	14,618,634 ,,

To render these numbers complete, a statement is given of the general movement of imports of oil into France for the first 9 months of 1891, as compared with 1889 and 1890, the total amounts received and sold being included.

First nine months.	Quantity received.	Quantity sold.
1889	19,812,400 kilos.	14,191,400
1890	20,327,523 ,,	14,951,841
1891	26,236,097 ,,	20,359,172

The value represented by the amounts sold would be as follows:—

First nine months.	
1889	14,333,314 francs
1890	14,951,844 ,,
1891	20,359,172 ,,

It follows from the above figures that the Marseilles trade in olive oil represents more than half of the total trade of France, and that to-day Tunis replaces Italy as a source of olives with advantage, although, before the rupture of our friendly relations with the Italian Peninsula, almost all our supplies of this product were drawn thence.—*Les Corps Gras Industriel.*

COMPOSITION OF ARTIFICIAL CRYSTALS OF CALCIUM PHOSPHATE.

BY H. W. WILEY AND W. H. KRUG.

THE basic slag, resulting from the manufacture of steel, by the basic process, under the patents of Mr. Jacob Reese, has only lately come into use for fertilising purposes. Vast deposits of natural calcium phosphate have, up to within a year or two, prevented the profitable marketing of the basic slag. Perhaps a more accurate statement would be that the failure of our agriculturists to appreciate the value of basic slag as a fertiliser has had a more potent influence in this respect than the competition of natural phosphates. Mr. Reese, after many years of litigation, has finally been awarded priority for his claims as the inventor of the basic process. It is therefore more appropriate, from a legal point of view, at least in America, to call the slag by his name than by the name of Thomas, as is done in Europe. The large steel furnaces at Pottstown, Pa., have placed upon the market a fine article of slag phosphate, which, from the name of the inventor, is called "Reese's odourless phosphate."

A few months ago Mr. Reese sent me a sample of the crystals of calcium phosphate taken from the Pottstown furnaces, accompanied by the following statement:

"As a matter of interest to you, I will send you this day by express, a sample of crystallised tetrabasic phosphate. It is one of the finest specimens I have ever seen. The pure crystals have the following composition:"

Ca	42·901	per cent.
P	16·606	,,
Mg	0·494	,,
Fe	0·072	,,
V	0·646	,,
O	39·181	,,
Loss and undetermined	0·100	,,

Mr. Reese gave the following as the composition of the crystals:

$(CaO)_4P_2O_5$	98·250	per cent.
MgO	0·828	,,
Fe_2O_3	0·100	,,
VO	0·722	,,
Undetermined	0·100	,,

A part of the sample sent by Mr. Reese, showing the crystals of calcium phosphate, two kinds of crystals were distiguished; first a tabular form, generally transparent, of a light yellow colour varying to dark brown, and second an acicular form dark green by reflected light and bluish green by transmitted light.

Considerable quantities of these two classes of crystals were carefully separated and subjected to analysis. The acicular crystals only were found to contain vanadium. The analysis gave the following results:

	Acicular Crystals.	Tabular Crystals.
Calcium oxide	42·69	53·61
Ferric oxide	20·98	9·64
Aluminium oxide	3·71	0·91
Magnesia	0·49	0·08
Vanadium dioxide	0·18	
Phosphoric anhydride	27·06	33·92
Silica	4·96	1·75
Total	100·07	99·91

Different methods of combining the material or substances found in the crystals may be suggested. Regarding the crystals as tetrabasic calcium phosphate, the following combinations are admissible:

Acicular Crystals

$Ca_4P_2O_9$	62·20	per cent.
Fe_2O_3	18·36	,,
$CaSiO_3$	9·59	,,
Fe_3PO_4	4·95	,,
Al_2O_3	3·71	,,
$Mg_4P_2O_9$	1·08	,,
V_2O_2	0·18	,,
Sum	100·07	,,

or in the second place—

$Ca_4P_2O_9$	69·70	per cent.
Fe_2O_3	20·98	,,
SiO_2	4·96	,,
Al_2O_3	3·71	,,
MgO	0·49	,,
V_2O_2	0·18	,,
Sum	100·02	,,

In the tabular crystals the following probable combination may be assumed:

$Ca_4P_2O_9$	84 93	per cent.
Fe_2O_3	8·55	,,
$CaSiO_3$	3·38	,,
Fe_3PO_4	2·06	,,
Al_2O_3	0·91	,,
MgO	0·08	,,
Sum	99·91	

or,

$Ca_4P_2O_9$	87·43	per cent.
Fe_2O_3	9·64	,,
SiO_2	1·75	,,
Al_2O_3	0·91	,,
MgO	0·08	,,
Sum	99·81	

There is little doubt of the fact that the second form of combination in the two cases given above is the proper one, unless the silica exist

combined with lime as indicated in the first form. In other words, the lime and phosphoric acid present in the crystals are combined in the form of tetrabasic calcium phosphate. In the acicular crystals this method of calculation gives an excess of ·05 per cent. phosphoric acid and in the tabular crystals of ·10 per cent. of lime, but these excesses can easily be ascribed to analytical errors, thus leaving the whole of the lime and phosphoric acid united as mentioned.

The striking differences between these analyses and those furnished by Mr. Reese are shown in the presence of iron, silica and alumina. In the crystals submitted to analysis by him scarcely any constituents were found except the tetrabasic phosphate. In those submitted to examination in our laboratory considerable quantities of impurities, chiefly iron and alumina, were discovered. Owing, however, to the definite crystalline form, it appears that these impurities were not in sufficient quantities to disturb the crystalline forces. The presence of vanadium in the acicular crystals is interesting, although the amount discovered in our laboratory was much inferior to that in the analyis by Mr. Reese.

It might be interesting also to account, or at least try to account for the presence of tri-calcium phosphate only in the samples under analysis. Computing the lime as tri-calcium phosphate, it is found that in each case there is a considerable excess of this element. In the case of the acicular crystals, the composition would probably be something like the following :

$Ca_3P_2O_8$	59·07	per cent.
Fe_2O_3	20·98	,,
$CaSiO_3$	9·58	,,
CaO	6·06	,,
Al_2O_3	3·71	,,
MgO	0·49	,,
V_2O_3	0·18	,,
Sum	100·07	,,

In the tabular crystals, the probable composition, on the above assumption, would be as follows :

$Ca_3P_2O_8$	84·05	per cent.
CaO	1·85	,,
Fe_2O_3	9·64	,,
$CaSiO_3$	3·38	,,
Al_2O_3	0·91	,,
MgO	0·08	,,
Sum	99·91	,,

There is little use of discussing here the above assumption, as there is no doubt whatever of the fact that the lime and phosphoric acid are combined chiefly as tetracalcium phosphate.

The study of the crystals of tetrabasic calcium phosphate is not new in chemical literature. As long as four years ago Hilgenstock prepared artificial crystals of this salt and published a description of them.* This artificial salt was prepared by fusing tri-calcium phosphate, di-calcium phosphate and phosphoric acid with a calculated amount of lime. Calcium fluoride was used as a flux. Iron and vanadium being excluded from this mixture, the crystals obtained were colourless needles, which gave on analysis 38·51 per cent. of P_2O_5, and 60·08 per cent. of lime and a trace of silica. Hilgenstock noticed at this time that the corresponding acicular crystals appearing in the slag from the furnaces are coloured brown or black by a mixture of metallic oxides. He, however, did not notice the presence of vanadium as one of them. Hilgenstock explains the different crystalline forms as being due simply to the temperature at which crystallization takes place. He states, moreover, that the tetrabasic phosphate is invariably the form in which phosphoric acid occurs in Thomas slag. Tribasic phosphate is reduced by metallic iron at the melting point, but metallic iron does not have this effect upon the tetrabasic salt.

Observations on the grouping of the crystals in the slag blocks tend to show that the first crystals to appear are the tabular ones. After these come the brown hexagonal needles, and towards the last when the fluid heart of the block begins to solidify and become richer in silica, the deeply coloured lustrous forms of crystals appear. Hilgenstock obtained by melting the rhombic tables with calcium fluoride, hexagonal crystals. He also states that silica invariably appears as calcium silicate, which, however, would not be the case with the samples examined in our laboratory, on the assumption that the whole of the phosphoric acid was combined with calcium. If we assume that a sufficient amount of calcium is obtained for the formation of calcium silicate, then the excess of phosphoric acid in that case would go to the iron or the alumina.

Rücking and Linde† also make a number of observations on the crystalline forms in which tetracalcium phosphate appears in slag. After the treatment of the sample with a magnet, three different compositions of crystals in the slag were separated by differences in specific gravity. The method of separation is not stated, but was probably by Thoulet's solution consisting of a mixture of iodide of mercury and potassium in varying proportions. The analytical data obtained on the three samples of material of different specific gravities were as follows :—

	No. 1. Per cent.	No. 2. Per cent.	No. 3. Per cent.
P_2O_5	36·77	31·19	38·77
SiO_2	3·81	9·47	0·89
Cl	trace	...	,,
S	...	trace	0·28
Al_2O_3	1·09	1·13	0·89
Fe_2O_3	1·78	...	
FeO	2·22	0·95	...
Mn	...	trace	trace
CaO	53·51	57·42	59·53
MgO	0·40	trace	trace

Sample No. 1 dissolved in hydrochloric acid separated gelatinous silica. Part of the phosphoric acid, however, was replaced by para-silicic acid, and part of the calcium by iron, magnesia, and alumina.

In product No. 2 were found crystallized together particles of forms Nos. 1 and 3 hard to separate. In this form also it is probable that a part of the phosphoric acid in combination with the lime is replaced by silica.

The form No. 3 is found in tabular crystals varying from clear to deep brown. It may be regarded, according to the authors, as a salt of the undiscovered acid $H_8P_2O_9$. A small portion of the phosphoric acid is also replaced by the silica in this compound.

It may be of interest in this connection to give a few comparative data of the composition of basic slag analyses in Europe, although no attempt is made to give a complete list of the analyses which have been printed.

Jensch* gives the following composition of basic slag before and after boiling with a sugar solution. The object of boiling with the sugar solution was to extract any uncombined calcium oxide which the slag might contain.

Commercial Thomas Slag Meal.

	Natural Meal. Per cent.	After Boiling with Sugar Solution to Extract Lime. Per cent.
SiO_2	5·23	6·22
P_2O_5	20·15	23·99
CaO	54·06	45·73
MgO	4·39	5·23
FeO	7·09	8·44
Fe_2O_3	4·87	5·79
MnO	1·21	1·44
Al_2O_3	1·35	1·61
S	0·24	0·28
SO_3	0·57	0·60
CO_2	0·74	0·91

Otto* gives the following as the result of the analysis of a sample of basic slag and the probable form of combination of the constituents.

Found.	Per cent.	*Calculated.*	Per cent.
P_2O_5	19·03	$Ca_4P_2O_9$	49·02
SiO_2	8·20	$CaSiO_3$	15·85
MnO	5·24	CaO free	11·00
FeO	8·06	CaS	1·35
Fe_2O_3	5·14	MnO	5·24
CaO	49·90	FeO	8·06
S	0·60	Fe_2O_3	5·14
MgO	3·40	MgO	3·40
Al_2O_3	1·10	Al_2O_3	1·10
CO_2	trace		

The crystals found in this sample of slag gave upon analysis the following numbers :

P_2O_5	38·75	per cent.
CaO	61·30	,,

While the theoretical composition of pure tetracalcium phosphate is :

P_2O_5	38·80	per cent.
CaO	61·27	,,

These crystals therefore are almost absolutely pure tetracalcium phosphate.

METHODS OF ESTIMATING VANADIUM.

As the estimation of vanadium does not occur often, it would perhaps be advisable to describe the methods employed.

* Stahl und Eisen, 7, p. 557.
† Stahl und Eisen, 4, p. 245.

* Chem. Industrie, 1887, 12; Bied. Centralblatt f. Agr. Chem. (1888), 17, 12.
* Chemiker Ztg. 1887, No. 18, 255.

Blair* gives the following method :

Treat 5 gms. of the drillings with 50 c.c. of nitric acid (sp. gr. 1·20) in a No. 4 beaker. When all action has ceased, transfer the liquid to a porcelain dish, evaporate to dryness and heat at a gradually increasing temperature over a Bunsen burner until the nitrates are nearly all decomposed and the mass separates easily from the bottom and sides of the dish. Transfer the cool mass to a porcelain or agate mortar, and grind it thoroughly with 30 gms. of dry sodium carbonate and 3 gms. of sodium nitrate.

Transfer to a large platinum crucible and fuse well for about an hour at a high temperature. Run the fused mass well up the sides of the crucible, allow it to cool, dissolve in hot water and filter. Dilute the filtrate to about 600 c.c. and add nitric acid carefully to get rid of the carbonic acid. Boil off the latter, but be careful to keep the solution always slightly alkaline. Add nitric acid, drop by drop, until the solution is just acid, then add a few drops of carbonate of sodium solution to render solution faintly, but decidedly alkaline. Boil for a few minutes and filter. To the filtrate add a few drops of nitric acid to make it faintly acid when the appearance of the yellowish colouration is an indication of the presence of vanadic acid. Add to the solution a few c.c. of mercurous nitrate and then an excess of mercuric oxide in water to render the solution neutral and insure the complete precipitation of all the mercurous vanadate. With the mercurous vanadate are precipitated also all the phosphoric, chromic, tungstic and molybdic acids as mercurous salts. Heat to boiling, filter, and wash the precipitate. Dry, separate the paper, burn it in a platinum crucible, add the precipitate, heat carefully to expel the mercury, and finally heat to full redness. Fuse the brownish red mass remaining in the crucible with a small amount of sodium carbonate and a pinch of sodium nitrate. Dissolve the cooled mass in a small amount of water, and filter into a small beaker. Add to the solution pure ammonium chloride in excess (about 3 to 5 grms. to each 10 c.c. of solution), and allow it to stand for a time, stirring occasionally. Vanadate of ammonium, insoluble in a saturated solution of ammonium chloride, separates out as a white powder. It is necessary to keep the solution decidedly alkaline, and a drop or two of ammonia must be added from time to time. The appearance of the faintest yellowish tint to the solution is evidence that the solution has become slightly acid, and this must be corrected, or the result will be too low. Filter on a small ashless filter, wash first with a saturated solution of ammonium chloride containing a drop or two of ammonia, and then with alcohol. Dry, ignite, moisten with a drop or two of nitric acid, ignite, and weigh as V_2O_5, which contains 56·22 per cent. vanadium.

QUANTITATIVE ESTIMATION OF VANADIUM AND SEPARATION OF VANADIC ACID FROM PHOSPHORIC ACID.*

The author finds that by the application of Rosenheim's iodometric method (*Annalen* **251**, 197) vanadic acid may be rapidly and exactly determined after first precipitating it as barium or lead vanadate. The substance is dissolved, and the vanadic acid precipitated with barium chloride or lead acetate The precipitate is boiled with HCl and potassium bromide, and the liberated bromine determined volumetrically with potassium iodide. In the absence of substances like molybdic acid, which are reduced by sulphurous acid or hydrogen sulphide, the vanadic acid may also be determined by reducing it, boiling off the excess of reducing agent, and determining the VO_4 by permanganate.

If the vanadic acid has been separated as barium or lead vanadate, the metal must first be separated before liberating with permanganate.

For the determination of phosphoric acid and vanadic acid when they occur together, the vanadic acid is first reduced to the tetroxide. The excess of reducing agent is expelled, and the phosphoric acid then precipitated with molybdic acid and filtered off. If the amount of vanadic acid is large, the precipitation of phosphomolybdate should be done rapidly at 55° to 60° C., using a considerable excess of molybdic acid ; or the vanadic acid may first be determined in the solution by boiling with hydrochloric acid and potassium bromide, estimating the liberated bromine as usual.

The phosphoric acid is determined by evaporating the solution with a little sulphuric acid to dryness, taking up the residue with water, reducing the vanadic acid with sulphurous acid, and precipitating the phosphoric acid by means of molybdic acid.

If alkalies are to be determined, the substance is dissolved in acetic acid, is treated at the boiling point with lead acetate, the lead vanadate filtered off, and the alkalies estimated in the filtrate.

Lindemann* gives the following method :

Dissolve 4 grms. of the finely powdered slag in 60 c.c. of dilute sulphuric acid [1 volume H_2SO_4 sp. gr. 1·84, to 4 volumes of water], boil a few moments, cool, make up to, say 80 c.c , filter, and take 40 c.c. for analysis. Add potassium permanganate solution (about decinormal) till there is a slight pink colour to ensure oxidation of the vanadium to V_2O_5. Add, drop by drop, a weak solution of ferrous sulphate till the pink colour just disappears. The vanadium is then present as a sulphuric acid solution of V_2O_5. Run in freshly prepared ferrous sulphate of known strength (2·183 gms. pure iron dissolved in sulphuric acid and made up to one litre), till a drop of liquid taken out of the beaker just begins to show a greenish-blue tinge when it touches a drop of ferricyanide of potash.

Note the ferrous sulphate used :

1 c.c.=·002 gm. V.
·002888 gm. V_2O_3.
·003648 gm. V_2O_5.

In practice Ridsdale modifies the method as follows :—

First add a little water to the powdered slag, boil, then add the dilute sulphuric acid.

Determine the value of the ferrous sulphate solution with $\frac{N}{10}$ potassium bichromate solution.

We desire to express our obligations to Mr. K. P. McElroy for his assistance in the preparation of this paper.

—*Jour. Anal. and App. Chem.*

* The Chemical Analysis of Iron, p. 103.
* R. Holversheet, Chem. Centr. (1890), 1, 977 ; J. Chem. Soc., Nov., 1890, p. 1,343.

ROYLE'S PATENT WATER RAISER.

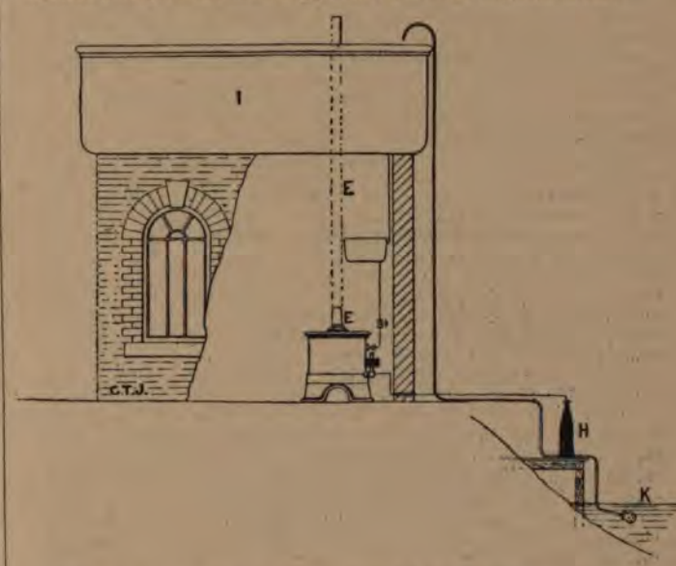
VERY numerous indeed are the cases where it is desirable to maintain a small but regular supply of water for manifold purposes, such as for use in stations, mansions, workshops, etc., in country places where the only source of water is either a well, brook, or pond. There are three essentials, however, which an apparatus designed for this purpose must embody, namely, that its action is automatic, the method of working simple and safe, and lastly that its initial cost be low.

In country places a plant of this sort must not be liable to get out of order, or require skilled labour for its superintendence.

There are many kinds of apparatus which have been suggested for this, but unfortunately they all more or less require the attention of some one who is accustomed to look after machinery, and has had some experience in that direction, otherwise what with neglect and bad treatment they soon get out of order and fall into discredit.

Perhaps the simplest of these is the hydraulic ram, which is automatic in its action, but is not of much use except when a stream of running water is the source from whence the supply is drawn.

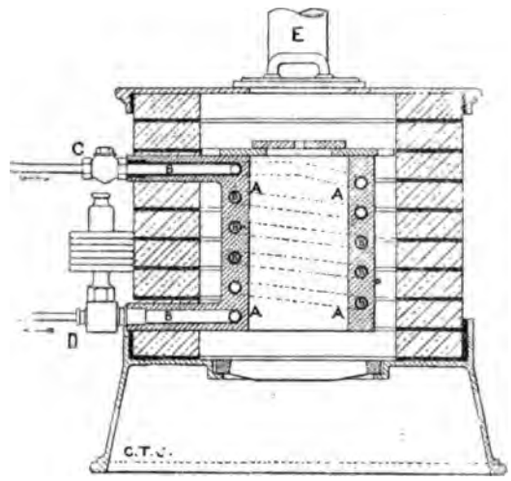
In order to meet this need, Mr. J. J. Royle, of Manchester, who is well known for the number and utility of his domestic patents, has devised a simple and effective apparatus, which we illustrate below.



This illustration gives a general view of a very likely installation of the apparatus for raising the water from the brook (K) into the tank (I). The apparatus consists essentially of what may be called an intermittent steam generator (which is shown in detail in Fig. 2), in which pulsations of steam are generated which act through the pulsator (H), raising the water in successive discharges into the tank (I), a check valve being placed on either side of H, one on the suction and the other on the exit pipe.

* Ztschr. f. anal. Chem. 18 (1879), p. 92.

The principle of the operation is simplicity itself, while in practice the performance which we had the pleasure of witnessing was thoroughly satisfactory, although the apparatus at the time was working under difficulties A small regulating tank, which is fitted with a ball valve, regulates the amount of water admitted to the generator to produce each pulsation. The volume of water employed is about a cubic inch. The steam generated from this in the heated coil is conveyed to the pulsator (H) by the thin pipe as shown, and thus raises the water contained in the pulsator, amounting to about three-fourths of a gallon, into the tank (I). As soon as this is done, the steam in condensing creates a vacuum, and thereby draws simultaneously a fresh charge into the pulsator from the brook, and another cubic inch of water into the generator from the regulating tank, when the cycle of operations just described is repeated.



The peculiar feature about the generator is the imbedding of the wrought iron coil (B) in a casing of cast iron (A). This accomplishes two ends. It effectually prevents the burning out of the coil, and owing to the increased mass the generation of the steam goes on more evenly, the increased uniformity being very marked

It will thus be seen that the whole apparatus is absolutely automatic. There is no danger of the coil bursting, as it is fitted with a patent relief valve (D), and a great heat is not required, since a black heat on the generator is all that is necessary. The fuel employed also is small in quantity, and a good deal of rubbish may be used in the furnace. As an indication of the possibilities of this apparatus, it is sufficient to say that in cases where the pulsator cannot be placed near the water supply, the apparatus will suck a vertical distance of about 10 feet and force to a height of nearly 200 feet. The apparatus which we inspected was of medium size, such as would be most suitable to meet ordinary requirements, and was raising about 300 gallons per hour.

Parliamentary Jottings.

RIVER POLLUTION IN LANCASHIRE.

In the House of Commons last week, on the motion that the Standing Orders be suspended and the Mersey and Irwell Prevention of Pollution Bill be read a third time,

Sir H. James opposed the suspension of the Standing Orders on the ground that without making an attempt to put in force the provisions of the Rivers Pollution Act, 1876, the County Council of Lancashire had taken the extraordinary course of introducing this bill It would place the County Council beyond the control of the Local Government Board, would introduce laws different from those in operation in other parts of the country, and would confer upon the Joint Committee powers in excess of those possessed by county councils and sanitary authorities under the general laws. It removed the safeguards which Parliament stipulated for in the Act of 1876, in the interests of sanitary authorities, manufacturers, and others. It created a series of new offences; it substituted in the trial of those persons a court of summary jurisdiction for the court of quarter sessions; and it so altered the general law that he objected on the part of his constituents to facilitating the progress of the bill.

Sir Francis Powell explained why the committee on police and sanitary regulations sanctioned the bill, and he complained that it was an improper use of the reports of the Local Government Board on bills of that kind to read them to the House as the right hon gentleman had done. It was admitted that the bill was an exceptional one, but an exceptional condition of things prevailed in the rivers referred to, and there was an agreement that something more drastic was required than was provided in the Rivers Pollution Act. The bill was unanimously desired by the County Council of Lancashire and by the Joint Committee, and it would be a great calamity if it were lost.

Mr Jacob Bright said that he, too, would regret extremely if the bill were lost.

Mr. Kelly was against the suspension of the Standing Orders

Mr. Philipps defended the action of the committee, of which he was a member, in passing the bill, which he said was an absolute necessity, the Mersey and Irwell and the smaller rivers being nothing more or less than open sewers. The population on the banks was increasing rapidly, the danger to these people was great, and the Rivers Pollution Act was altogether unequal to coping with it.

Mr. Roby warmly supported the bill on the ground of its necessity.

Dr. Tanner continued the discussion.

The House divided, and the motion for the suspension of the standing orders was carried by 71 to 6, amidst laughter.

The bill was then read a third time.

Sir H. James said that after the decisive character of the division he would not contest the matter further.

ROBURITE IN LANCASHIRE MINES.

The Home Secretary, answering Dr. Tanner, said that on April 29 he communicated to the House a report from the district inspector respecting the death of Edward Sandilands, whose death, inquired into by a coroner's jury at Atherton on February 12 last, was said to be primarily caused by inhaling the fumes from an exploded shot of roburite. He had no information as to the experiments by the Lancashire colliery managers, and had no reason to believe that under proper conditions roburite was injurious to health. There was nothing to justify the hon. member's imputatious against Mr. Hall, the mines inspector.

Our Book Shelf.

WATT'S DICTIONARY OF CHEMISTRY. Re-written by W. F. Morley, D Sc. and M.M.P. Muir, M.A. Vol. III. 856 pp. London: Longmans, Green & Co, 1892.

The third volume of this excellent work covers from Indium to Phenol. We have already pointed out the virtues of this work when reviewing the first two volumes, and the third, which has just been issued, shows clearly, as heretofore, that the authors intend the work to be a dictionary in the true sense of the word.

Volume III. covers many articles of interest which have been contributed by specialists who have made the various subjects dealt with their peculiar study.

Isomerism is perhaps the first article of pre-eminent importance which is met with in this volume.

A synopsis of the various opinions which have been expressed on this subject is given, the writer calling attention to the suggestion made at one time, concerning the possibilities of carbon possessing free affinities, a suggestion which has stood for a long time somewhat in the background.

The author, in describing the meaning of isomerism prefers to use the word in its more restricted sense, which, it is supposed, Berzelius originally intended it to have.

Lactic acid and lignone are also two important and interesting articles which contain much valuable information, and afford an excellent comparison with the information usually to be found in an encyclopædia upon these subjects. Lead and its salts, both organic and inorganic, are dealt with in full.

Following these come magnesium, manganese, mercury, and the mercur-ammonium compounds.

Under magnesium there is an interesting and very useful table comparing the properties of the metals in the magnesium group.

The salts, oxides, and oxy-acid salts of manganese are described in detail, and contain all that is required for a dictionary of chemistry. The account of the various methods in vogue for the cleansing and purification of mercury is concise, and sufficiently explicit to meet the requirements of a work of this nature.

The article on the rare metals is an exhaustive and ably written one, giving a complete *resumé* of all the metals which have been found during recent years. In referring to those which are as yet doubtful, as regards their elementary composition, attention is drawn to the distinction between the columbium discovered by J. L. Smith and tantalum, which is sometimes called columbium. This article is freely illustrated with diagramatic absorption-spectra.

Methane and methyl derivatives, including methylamine, methyl, benzene, sulphonic acid, and compounds of methyl with cyanogen,

of a lengthy nature, and, though occupying a good deal of space, r a lot of ground.

ere is an excellent article on milk, which is highly interesting. les on naphthalene and nitrification follow, and are well up to , the various nitro-benzene derivatives being fully described. el comes in for a considerable share of attention, its occurrence, erties, technical applications, and alleged decomposition being ed upon in turn, before passing to the various compounds with onia, etc.

itrogen is an important article covering the numerous oxides of gen which all claim considerable attention. The nitro-organic ounds are next described, and being extensive lead on to oils. e is but little information upon these, most of them being treated r their various headings, and even then somewhat sparsely.

ygen is about the next most important article, although the in- ation in connection with oxalic acid and osmiuth is very interesting. er the preparation of oxygen a review of the various methods and ances which have been, and are being used for manufacturing the is given, and leaves very little to be said upon the matter when ling the discussion of detail. There is also a most valuable article one, giving its preparation, properties, constitution, and history, tter being a very useful compilation, doing much to negative the rbolical statements which have accompanied a good deal that has said about this body. Antozone is also mentioned and dispelled, suppositionary body having been in all probability mistaken for gen peroxide, when ozone was in a state of embryo

ree good articles on paraffin, petroleum, and phenol complete this ne, which is an able and fitting component of one of the best s of reference which chemists of every class have possessed up to resent time.

WORKS: THEIR CONSTRUCTION AND MANAGEMENT. By G. Hughes, re-written by W. Richards. 8th edition; 410 pp., 75 woodcuts. Index. London: Crosby, Lockwood and Son, 1892.

e work of G. Hughes is an old and familar one, and in its time a useful book. It would be obvious to anyone acquainted with the nal work, that the task of re-writing the book, however, so as to for use in the present day, would not leave much of the original *idence.*

s it is the book stands pretty much the same as heretofore, with exception of certain additions, which do not always harmonise with remainder of the context. The historical sketch, at the opening of book, is by no means free from error; then comes the chemistry composition of coal gas, where several statements occur which lly meet the views of to-day, especially as regards the classification e diluents and impurities of coal gas. There is nothing much to gathered from the chapter on purification, since a very scanty nowledgment of the advances which have been made is all that is n, with one exception, however, which is to be found in the des- tion of the apparatus usually employed in testing the strength of noniacal liquors, etc., from which we are much surprised to learn , as far as the author is aware, Twaddell's hydrometers can only be ained from a certain firm at Westminister. London. We were not ure that five important firms, at least, out of London, had ceased to ply these articles, and are somewhat prone to the opinion that they continue to supply them even now. But this is only one instance many similar indications of extreme laxity in editing, blots which umbrage upon what good traits the book may otherwise possess. e delicacy of the methods employed in testing gas are eulogistically ched upon, but the description of their application is by no means as urate as it might be, while the *rationale* of analysing gas as des- ed is worthless. The remarks upon the price of gas and the sons for its increased consumption are somewhat dubious, the ter, however, being one which is of course open to argument. en in its entirety, it is to be regretted that the eighth edition of this k ever saw the light, since to those acquainted with the subject it is eless, and to the student positively harmful, so that the sooner it is in oblivion the better.

MENTS OF PHYSICS. By C. F. Fessenden; 299 p.p, 120 wood cuts. London: Macmillan and Co., 1892.

his little work is divided into four chapters. The first treats of ter and its properties, the second of kinematics, the third of amics, and the fourth of heat.

t is written in good style and is a type of what should be aimed at odern elementary text books, being written in the argumentative e, each experiment being carefully described and followed by ling questions put to the student, calling his attention to the uctions to be made from each experiment.

he book is evidently meant to be supplemented by the guidance of acher, this class of text book apparently being peculiar to the erican school, since the analogy between the arrangement of this book and another work of a similar kind also by an American, is very striking.

The reasoning is piquant, a good instance of which occurs under gravitation and the consideration of mass, where the following occurs. "Suppose a man in a boat pulls a rope attached to a ship. His pulling draws the boat to the ship, but the ship does not appear to move. If five hundred men in as many boats were to pull, the ship would be seen to move Did one man produce no motion? If so, five hundred men would produce no motion, since five hundred times nothing is nothing"

Moreover, the student is told much concerning recent discoveries, though, of course, in an elementary way, so that the book should be found a most useful aid to those engaged in the teaching and demonstration of elementary physics. The illustrations throughout the book are above the average for an elementary work.

AIR AND WATER. By Vivian B. Lewes, F.I.C.; 177 p.p. Illustrated with index. London: Methuen and Co., 1892.

Any attempt to popularise science is not always an entire success, but this book affords a pleasing exception. Its aim is to acquaint those who are interested in the influences of air and water upon every day life, with some of the most important parts which these two bodies play in the functions of existence.

Despite the advance of higher education, there is a large class of well educated people who do not realise the true import of natufal science.

The history of the atmosphere: its chief constituents and impurities, is told in simple language, devoid, as far as possible, of technicalities.

The treatmeut of water is equally good, the chapter on purification being especially so, the proper use of filters being emphasised in a manner which the importance of the question amply merits. The part played by aqueous vapeur in the formation of fog, is treated in a thoroughly capable manner, conveying a scientific explanation in a simple fashion. Accurate and comprehensive, couched in plain, straight-forward language, the book successfully accomplishes its end, and should materially assist the applicaion of modern science to the uses of every day life.

ANNUAIRE DE LA SAVONNERIE ET DE LA PARFUMERIE Edouard Moride. 500 pp. Illustrated. Paris: Baudry et Cie., 1892.

This work is an annual which is published in connection with the oil and soap making industries.

The development of the use of soap in France is traced at the outset from the mention of its use in history, to its introduction at Marseilles as an industry by the immigration of Italian workmen, and so on up to the present day.

A number of useful chemical and physical tables are also given, followed by the regulations of the Soap Syndicate of Marseilles, and other useful information, including a list of all the patents taken out in France in connection with the manufacture of soap between the years 1850 and 1890 inclusive.

A series of articles then follow, including the researches of Muntz on the adulteration of oils and fats. The optical analysis of oils by F. Jean, Notes on Glycerine by L. Droux, and an article upon the use of filter presses in the production of caustic lyes.

There is also an interesting chapter of statistics in relation to the soap trade of Marseilles.

In connection with perfumery, a good review is given of the best practical methods employed for the extraction of essences by distillation, relevant to which a general method for the analysis of alcohols is described by Ed. Mohler. The first part then concludes with an abstract of the new French Customs Tariff, specially bearing upon the articles imported for soap making and the prepartion of perfumes.

The second part contains a list of all the soapmakers in the world, which is supplemented by a list of perfumers in France, and the makers of soapmaking machinery, and all the requisites employed in the prosecution of these industries.

The work is one calculated to be of considerable practical assistance to soap makers and the like, though we are somewhat surprised to find English soap makers conspicuous by their absence, since they do a considerable share towards satisfying the world's consumption.

CHESTNUT WOOD TANNIN.

BY PROF. HENRY TRIMBLE.

THE *Castanea Vesca* of Linnæus or *C. Sativa* of Miller, variety Americana, is a large tree of rapid growth, found in many parts of the United States, especially in the eastern section from Maine to Delaware and on mountains as far south as northern Alabama.

An extract of the wood and bark has been prepared in this country and France for a number of years. This extract is especially useful in tanning, where it corrects the reddish colour of hemlock, and in dyeing

where it gives a dead black with salts of iron. It must not be confounded with the extract of chestnut oak. *Quercus Prinus*, Linn., which is also largely manufactured in America, and, no doubt, the manufacturers are not very particular to keep the two separate.

Most of the literature on the subject of chestnut tannin refers to that from the horse chestnut, *Æsculus Hippocastanum*.

In order to leave no room for doubt about the origin of the tannin described in this paper, the chips, free from bark, were collected from a large tree about forty years old, cut in the month of August.

A summary of the constituents of the wood, as found by a proximate analysis, may be of interest before commencing a description of the tannin :—

	Per cent.
Crystalline wax, melting at 50° C., soluble in hot 95 per cent. and in absolute alcohol	1·03
Gallic acid	·05
Resin	·28
Tannin, extracted by absolute alcohol	3·42
Mucilage	1·15
Dextrine	1·89
Sugar	·96
Tannin, extracted by water	1·92
Pectin and albuminoids	1·46
Extractive, dissolved by dilute acid	2·95
Ash	7·08
Moisture	7·05
Cellulose and lignin	70·76
	100·00

The results obtained from analysis agree so closely with gallotannic acid in all its reactions, we cannot but conclude that it contains gallotannic acid.

An acetyl derivative was prepared, which in many respects resembled pentacetyl tannin.

NOTICE.

LONDON AGENTS.

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**** We do not hold ourselves responsible for the opinions expressed by our correspondents.*

ANSWERS TO CORRESPONDENTS.

F. B. G.—Thanks for the notification, the matter has been seen to.

G. L. (Zürich).—We shall be pleased to do so, and have made note of your instructions in regard to address, for which we thank you.

J. C. O.—We think you will find the reference meet your requirements.

J. C. B.—Yes, it was the one we wanted. We are obliged to you for your information.

J. N.—We should be pleased to receive any communication on the subject.

H. J. K.—Lunge's Coal tar and Ammonia, most likely.

Trade Notes.

Solidified Fuel.—Mr. T. T. Barnard, of Tavistock, claims that he has solved the problem of the solidification of coal-dust, and states that he has brought his experiments to so successful an issue that the fuel produced is better than Nature has itself produced. The new fuel is said to be easily lighted, and is combustible in the ordinary manner. Mr. Barnard has erected works to test the article on a large scale.

Petroleum Fuel.—Patent rights are being sought for a new invention for the utilisation of crude petroleum, which, it is stated, obviates the difficulties which heretofore have militated against the success of petroleum fuel. The oil is conveyed into the furnace by a pipe, which regulates the flow to a nicety, and it is then blown into fine spray by a force pump, and so ignited that it burns with a fierce flame beneath the boiler, the oil supply and the degree of heat being under co control.

Martin or Thomas Slag.—Owing to the similarity in the ance of Martin and Thomas slags, considerable quantities of the have, it is stated by a foreign contemporary, been sold as Thoma The agricultural station at Bonn calls the attention of farmers fact, pointing out at the same time that although the manurial of Martin slag has not yet been investigated, the two slags n distinguished by the percentage of phosphoric acid which they c Martin slag containing, as a rule, about 12 per cent., while T slag contains from 15 to 17 per cent.

Calcium Sulphate in Wines.—The prohibition of the prac plastering wines, which has been in force in France for now close on months, is a wise precaution, but it is unfortunate that the n devised by M. Marty, for the estimation of the amount of c sulphate, is not capable of giving very accurate results. M. stated in his evidence in a recent prosecution, that an error centigrammes was easily made. This was confirmed by Mr. who was appointed to investigate the matter, the latter gen going so far as to say that it was impossible to make an exact as means of any of the existing processes. Here is a chance f exponents of chemical research in this country.

Naphthylamine Black.—Messrs. Leopold Cassella and Co have recently introduced a new black, which they call naphthyl 4 B. It is dyed in one bath costing less than logwood. The is fast to light, and does not injure the wool fibre. For dyeing the following is recommended for 100 lb. of goods :—take 5 lb. bisulphate, 0·5 pints of acetic acid, or else 10 lb. of Glauber and one pint of sulphuric acid. Enter the goods at 140° F., an to the boil gradually and boil for an hour. Silk is dyed as usua the addition of as much sodium bisulphate or acetic acid as is me above.

Union of German Soda Manufacturers.—The German facturers of soda ash formed a Union some time ago, with headq in Bernburg. So far the results of this pool have been satisfactor members, and it is now proposed to form another Union, to e all the German manufacturers of soda crystals. These buy the material from the Bernburg Syndicate, the foreign markets unattainable for them on account of the Customs duty, but the hitherto undersold each other to the verge of ruin. At the invit the Bernburg Syndicate the crystal soda men met in conference r to lay down the basis for a convention. It is suggested that the facturers shall form themselves into geographical groups, each o is to supply its own parts of the country. The production various works is to be regulated according to their average outp prices are to be raised moderately.

MINERAL FATS.

The preparation of stable fats from the treatment of vegetabl mineral oils is a somewhat lengthy operation, and attended with a considerable amount of risk when it is desired duce a fat of a definite consistency.

A process which has recently been patented by M. Geoffroy, to accomplish this end by utilising the fatty acids by converti same into a fatty base which is of a mineral nature.

This fat is composed of a soft soap with which the mineral mixed. It is made by neutralising, by means of potash, soda, l any other suitable base, fatty acids derived from animal or veg oils. Under the term fatty acids, the inventor includes the r from stearine and similar works, and the residues obtained after e ing the glycerine from neutral fatty bodies.

These fatty acids are composed chiefly of oleic with a small p tion of margaric and stearic acids. The process is described as Milk of lime is mixed in a boiler in the cold with the fatty aci mineral oil, then heated to between 50° and 60° C. for about th hours, taking care to well and constantly stir the mixture. The tion of the soap will soon take place and the oil will be found t been taken up After four hours the process is complete and t sistency of the product constant. The two following formulæ ar showing the proportions to be taken to make either a liquid or fat. Compounds of varying consistency can be produced by ch the proportions at will.

	Liquid fat.	Solid fat.
Mineral oil..	88·00%	5·00%
Fatty acids	5·00%	62·00%
Lime	0·75%	9·00%
Water	6·25%	24·00%

The fats thus obtained can been mixed with animal or vegetable all proportions.

Market Reports.

MISCELLANEOUS CHEMICAL MARKET.

ere are no changes to record in the position of any of the staple cts of the alkali trade. In the home markets business generally et, owing to Whitsuntide holidays. Quotations for caustic are without alteration, viz., f.o.b. Tyne, 77%, £11. 10s.; and Liverpool, 74%, £11. 5s.; 70%, £10. 5s.; 60%, £9. 2s. 6d.; eam, 60%, £8. 17s. 6d. per ton; and for parcels under 10 tons er ton more. Soda ash, 1 5/16d. to 1 3/8d. per degree f.o.b. ed soda ash, 1 5/8d. per degree. Chlorate of potash, 6¾d. per lb. ly deliveries. Chlorate of soda, 8d. per lb. Recovered sulphur t £5. per ton in bulk, at makers' works. Vitriol is rather more ful, as usual with the approach of summer months and the r demand for sulphate of ammonia manufacture. Muriatic acid in price and in good demand. Sulphate of copper still rules £15. 10s. to £15. 15s. White powdered arsenic continues to ce, and there is a fair amount of business doing both for home xport trade. Prices of arseniates are correspondingly dearer. is quiet but firm in price, at 29s. to 30s. per cwt. Brown acetate e is still selling freely at slightly improved prices for forward ry. In acetates generally the position is unaltered, trade lly being quiet. Tin and zinc salts continue firm Potash, e and carbonate, are steady in price with a good demand. mates selling freely at the advance. Oxalic acid slightly firmer, to 3¾d. nett per lb.

LIVERPOOL OIL AND COLOUR MARKET.

LIVERPOOL, SATURDAY.

LS.—Palm oil: Both Accra and Lagos are steady at last quota- for transit. In Olive values continue without change, and in view holidays there has been little business doing. Linseed has a quiry, at 19s. 6d. to 20s. per cwt. in export casks. Cottonseed ues without change at 19s. 6d. for Liverpool refined, and 19s. 9d. rt. for American. Castor oil remains *in statu quo ante*, there no change in prices for either good seconds Calcutta or first re French. Sales of tallow are small at recent currencies. , common, is quoted 3s. 9d. for forward delivery; spot is still at ½d. per cwt. The market is quiet. Spirits of turpentine are le, 24s. 6d. being perhaps the nearest all round value. American eam and Russian refined are without change.

OLOURS.—Prices continue unchanged. Ochres: Oxfordshire, on, £10., medium, £12., best, £15.; Derbyshire, common, 40s., um, 50s., best, 60s. Welsh, best, 70s., seconds, 50s., and common, Irish, Devonshire, 40s. to 45s.; French, J.C., 55s. to 60s.; , 65s. to 67s. 6d. Umber: Turkish quiet. Devonshire, 50s. to White lead, red lead, and oxide of zinc unchanged. Venetian £6. 10s. to £10. Cobalt: Prepared oxide, 10s. 6d.; black, d.; blue, 6s. 6d. Zaffres: No. 1, 3s. 6d.; No. 2, 2s. 6d. e of iron: common, £6.; medium, £10.; finest, £20.

THE METAL MARKETS.

NDON, FRIDAY.—Pig iron firm; Scotch warrants closed at 3½d. cash. Copper firm: Chili bars, G.O.B.'s and G.M.B.'s l at £46. 15s. cash, and £47. 5s. three months. Tin firm: s closed at £100. cash, and £99. 12s. 6d. to £99. 15s. three hs. Lead quiet: Spanish, £10. 16s. 3d. to £10. 17s. 6d. sh, £11. to £11. 5s. Silesian spelter, ordinary, £22. 12s. 6d. silver unaltered. Copper shares quiet: Cape, 1⅝ to 1¾; po, 2⅜ to 2½; Mason and Barry, 4¼ to 4⅜; Rio Tinto, 17¼ ⅜; Tharsis, 5 to 5½; Panulcillo, ⅜ to ½.

ASGOW, FRIDAY.—Market firm, with fair business. Scotch at 41s. 5d. and 41s. 11d. one month; closing with buyers at d. cash, sellers ask 41s. 9d. Middlesbrough done at 40s. 10½d. also at 41s. one month, closing with buyers at 41s. cash, sellers 1s. 4½d. Hematite closes with buyers at 51s. cash, sellers ask 3½d.

THE LIVERPOOL MINERAL MARKET.

ere is no material change in the prices of minerals this week, h on account of the holidays there is not so much business passing. anese: Arrivals this week have been practically nil. Stocks been largely drawn upon for consumption, and prices n firm. Borate at 6¼d. per lb.; sulphate, £21. 10s.; te, 1s. 6d. per lb.; chloride, £15.; carbonate, £12. 10s., steady. Magnesite: Raw lump quiet. Raw ground £6. 10s., and calcined £12. 10s. Bauxite (Irish Hill brand) in good demand; lump 20s., seconds 16s., and thirds 12s. French chalk: Prices continue to remain steady, especially for "Angel White" brand and "Silvery," 90s. to 92s. 6d.; prime quality, 90s. to 95s.; and superfine, 105s. Barytes: Carbonate still scarce, especially best lump, at 90s. to 95s.; nuts, 70s. to 80s.; whilst finest white sulphate is steady. "Angel White," No. 1, 70s.; No. 2, 60s. to 65s.; No. 3, 45s. Pumice stone quieter. Iron ore quiet; Bilbao shipments unaltered; Irish and Cumberland easier. Santander and manganiferous, there is more doing. Emerystone: There is good inquiry for best brands at full figures; No. 1 lump, £5. 10s. to £6.; smalls, £5. to £5. 10s. Fullers' earth quiet; best lump, 55s.; fine impalpable ground, £7.; "Emerald" ground, 80s. Scheelite, wolfram, tungstate of soda, and tungsten metal continue firm without alteration. Chrome ore firmer, especially for higher grades. Antimony ore and metal more doing. Asbestos firm. Potters' lead ore, smalls, £10. 10s. to £11. 10s. Calamine easy. Strontia sulphate (celestine) quiet. Limespar unchanged, especially for English manufactured; old G.G.B. brand in demand at 50s. (ground). Felspar quiet. Fluorspar: Best quality scarce. Ferro-manganese steady, 75%, £12.; 85%, £13. 15s. Plumbago brisk. Spanish, £5.; best Ceylon lump at last quotations; Italian and Bohemian, £4. to £12. per ton. "Founders," £5. to £6.; Blackwell's "Mineraline," £10. French sand, 20s. to 22s. 6d. Ground mica, £45. to £50. China clay steady; common, 18s. 6d.; good medium, 22s. 6d. to 25s; best, 30s. to 35s. (at Runcorn). Bog ore (oxide of iron) steady; finest quality 22s. to 23s.

TYNE CHEMICAL REPORT.

SATURDAY.

Market steady. Strong demand for bleaching powder, which is still very scarce; more doing in caustic soda. Prices remain unaltered. Bleaching powder, softs, £7. 10s. and £7. 12s. 6d. per ton, hards, £7. 17s. 6d. per ton; caustic soda, 77/76%, £11. 15s. per ton, 70%, £10. 5s. per ton; recovered sulphur, 2 cwt. bags, £5. 5s. per ton; soda ash, 48%, £5. 8s. 9d. per ton, 52%, £5. 17s. 9d. per ton, 56%, £6. 6s. 9d. per ton; alkali, 36%, £4. 18s. 6d. per ton; white alkali, 48%, £6. 10s. per ton, 50% £6. 15s. 6d. per ton, 52%, £7. per ton; hyposulphite of soda, in 5-7 cwt. casks, £7. per ton, in 10 ton lots, ditto in 1 cwt. kegs, £7. 15s. per ton, in 10 ton lots; silicate of soda, 75° Tw. £3. per ton, 100° Tw. £4. per ton, 140° Tw. £4. 7s. 6d. per ton; soda crystals, in casks, £2. 17s. 6d. per ton gross weight, in 2 cwt. bags, £2. 17s. 6d. per ton nett weight; chlorate of potash, 7d. per lb. less 6%; pearl hardening, £3. 10s. per ton nett; pure white sulphate of alumina, £4. 10s. per ton; blanc fixe, £7. 10s. per ton; chloride of barium, £7. 10s. per ton; nitrate of baryta crystals, £19. per ton; nitrate of baryta, ground, £19. 10s. per ton; sulphide of barium, £7. per ton; carbonate of alumina, £28. 10s. per ton; aluminate of soda, £33. 10s. per ton; hydrate of barium, £11. per ton.

South Durham salt firm at 10s. 6d. to 11s. per ton f.o.b. Tees.

Coals: The settlement of the Durham miners' strike has caused considerable excitement here, and the market may best be described as unsettled.

Very little additional coal is likely to be available for a week or ten days, and it is difficult to give any exact quotations.

Coal is, however, likely to be decidly lower.

WEST OF SCOTLAND CHEMICALS.

GLASGOW.

Although production here is not at all interrupted by the recurrence of Whitsuntide as it is in England, the Exchanges close from Friday to Tuesday, and the usual transaction of business thus meets with impediment of a kind. Unfortunately the interruption is felt but little, for all the product markets are just now exceedingly depressed, with nothing like activity anywhere.

Calico printing, and most of the dyeing works, are very idle, and what there is doing is insufficiently paid for. The calico printers' syndicate for Scotland is a proposal which is not dead yet, though for some time little heard of. The project is seriously in hand again, and it is believed that some practical shape will soon be taken. The woollen dyers (South of Scotland) are better employed than any of the others, but scarcity of orders, in this case also, is descried ahead.

Prices of ordinary chemicals are unchanged; bleaching powder is scarce and pretty firm, and the others are steady, though not much passing.

Nitrate of soda has made a further drop, and that has not been good for sulphate of ammonia, which has again to be quoted lower.

Paraffins are nominally unchanged, but in lubricating oils at least there is a feeling of increased weakness, and the prices given below are probably susceptible of being shaded.

Chief prices current are:—Soda crystals, £2. 17s. 6d., nett Tyne; alum in lump, £5. 10s., nett Glasgow; soda ash, 1⅜d., less 2½%, Tyne; caustic soda, white, 74°, £11. 10s., 70/72°, £10. 5s., 60/62°, £9. 5s. and cream, 60/62°, £9. all nett Liverpool; bicarbonate of soda, 5 cwt. casks, £6. 15s., and 1 cwt. casks, £7. nett Liverpool; refined alkali, 1⅜d., less 2½% Tyne; bleaching powder, £7. 10s. to £7. 12s. 6d. nett Tyne; saltcake, 36s. 6d.; borax, English refined, £29., and boracic acid, £37. 10s., nett Glasgow; bichromate of potash, 4½d. nett, for Scotch and English deliveries (for export 4¼d. nett f.o.b. Glasgow); bichromate of soda, 3¾d., nett, for Scotch and English deliveries (for export 3½d. nett f.o.b. Glasgow); chlorate of potash, 6¾d., less 5% any port; nitrate of soda, 7s. 10½d. to 8s.; sulphate of ammonia, £9. 15s. f.o.b. Leith; salammoniac, first and second white, £35. and £33., less 2½% any port; sulphate of copper, £15. 10s., less 5% Liverpool; paraffin scale (hard), 2 15/16d., and soft 2 7/16d. to 3d. per lb.; paraffin wax, 120°, semi-refined, 3⅜d. to 4d.; paraffin spirit (naphtha), 6d. a gallon; paraffin oil (burning) 5d., 5¼d. and 5½d. according to kind, at works, for Scotch buyers (English and Irish sales about 1d. lower); ditto (lubricating), 865°, £3. 10s. to £4., 885°, £5. 5s. to £7., and 890/895°, £6. to £8. Week's imports of raw sugar at Greenock, were 18,232 bags.

New Companies.

Johnson's Patents, Limited.—This company was registered on the 27th ult. with a capital of £40,000., in £10. shares, to acquire, develop, and turn to account certain patents and inventions to be acquired by an agreement with Mr. R. Johnson, referred to in clause 3 of the articles, and to carry on the business of ironfounders, mechanical and electrical engineers, brass and copper workers, millwrights, etc. The subscribers are:—

	Shares.
H. Mallalieu, Delph Lodge, Delph, near Oldham	1
E. R. Buck, Oakfield, Poynton Stockport	1
F. Mallalieu, Bailey-terrace, Delph, near Oldham	1
R. Johnson, Oak-street Works, West Gorton, engineer	1
Mrs. S. M. Buck, Oakfield, Poynton, Stockport	1
R. R. Buck, Norfolk-road, Carlisle	1
A. H. Mallalieu, Delph, near Oldham	1
J. Deas, 126, Market-street, Manchester	1

Scotts Engineers, Limited.—This company was registered on the 26th ult., with a capital of £20,000, in £1. shares, to acquire, turn to account, and carry on the business of engineers carried on by Messrs. Scott and Co., Newton Heath, Manchester, and the patent rights of Mr. A. Scott, and with a view thereto to adopt the agreement dated May 24th., 1892, between Mr A. Scott of the one part, and Mr. J. Piggott (for the company) of the other part. The subscribers are:—

	Shares.
J. Cocker, 179, Park-road, Oldham	1
E. R. Noall, 79, Queen's-road, Oldham, cotton waste dealer	1
W. C. Bagnall, Back Foundry-street, Manchester, oil merchant	1
J. Stephenson, 8, Victoria-street, Burnley	1
T. B. Brooks, 45, Spring Gardens, Manchester	1
A. Scott, Newton Heath, Manchester, engineer	1
W. T. Rylance, Manchester, solicitor	1

County Brick and Tile Co., Limited.—This company was registered on the 31st ult., with a capital of £10,000., in £5. shares, to acquire the right to work quarries of sandstone, slate, limestone, coal, brickfields, fireclay beds, etc., and to carry on the business of builders and contractors, stone merchants, brick and tile makers, etc. The subscribers are:—

G. Holt, Springfield-place Bury, dentist
J. Preston, Bury, confectioner
T. Thornley, 114, Tottington-road, Bury
J. Bryne, Woolfield, Bury, contractor
W. R. Ashworth, Ivy Bank, Green Mount, Tottington
J. Holland, Brooklands, Tottington, near Bury
E. Cunliffe, Hazlehurst, Ramsbottom

Gazette Notices.

PARTNERSHIPS DISSOLVED.

Perkins and Powell, Dionis Yard, Fenchurch-street, City, spice merchants, drysalters.

W. G. Orchard and W. G. Cormack under the style of the Kent Mineral Co. Deptford, mineral water manufacturers.

W. G. Couper, C. C. H. Millar, and the Hon. G. F. McGarel-Hogg, the style of Couper, Millar and Co., Fenchurch-avenue, City and Lan Wharfe, Millwall, merchants and chemical manufacturers, as far as regi Hon. G. F. McGarel-Hogg.

F. A. Huskisson and G. W. Birch under the style of Huskisson and Co., B ham, oil, colour, and varnish makers, hardware merchants and manufact

The Patent List.

This list is compiled from Official sources in the Manchester Te Laboratory, under the immediate supervision of George E. Dav Alfred R. Davis, who report professionally upon the value of Ch Patents.

APPLICATIONS FOR LETTERS PATENT.

Antiseptic Waterproof and Airproof Composition. N. Procter and W 9,723. May 23.
Removing Soot, etc., from Waste Chimney Gases. M. A. 9,733. May 23.
Explosives. E. von Brank. 9,749. May 23.
Utilising Peat Moss as a Fuel E. Bracewell. 9,757. May 23.
Purification of Waste Water from Sewers and Works, etc. H. Stic May 23.
Artificial Stone. E. M. Fox. 9,767. May 23.
Improved Detergent. A. C. Irwin. 9,769. May 23.
Treating Sewage Sludge. J. R. Alliott. 9,780. May 23.
Treating Metallic Sulphurets and Sulphur Ores. L. Bemelmans May 23.
Apparatus for the Electrolysis of Alkaline Chlorides. D. G. Fit 9,799. May 24.
Aluminium Alloy. W. A. Briggs. 9,841. May 24.
Manufacture of Degras. Max von Schmidt. 9,867. May 24.
Improvement in the Manufacture of Salt. W. P. Thompson. 9,834.
Ice Making and Refrigerating Apparatus. S. Puplett and J. L. Rigg May 26.
Treating Coal Tar for the Production of Light Gas. W. Baecker May 26.
Artificial Marble. H. A. Majewski and W. Beyenbach. 9,974. May
Treating Portland Cement Residues. J. Hoyle. 10,010. May 26.
Coal and Mineral Washing Apparatus. A. Kesson, D. Campbell, and W. Reid. 10,037. May 26.
Utilising Ferrous Liquors from Galvanising and other Works. Ramage. 10,104. May 27.
Refrigerators. E. Wall and G. H. Frecknall. 10,108. May 27.
Improved Condenser for use in the Manufacture of Gas. E. Wal H. Frecknall. 10,112. May 27.
Basic Dyestuffs. J. Y. Johnson. 10,138. May 27.
Artificial Stone J. Baines. 10,160. May 28.
Improvements in Electric Furnaces and Treatment of Au Sulphides. J. W. Cann and R. E. Commons. 10,197. May 28.
Apparatus for the Electro Chemical Production of Bleaching C. Kellner. 10,200. May 28.
Softening and Purifying Water. H. L. Doulton. 10,219. May 28.

IMPORTS OF CHEMICAL PRODUCTS

AT

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Period ending May 24th.

Ammonium Chloride—

Holland,	5 pkgs.	J. Owen
Germany,	102	Perkins & Homer

Antimony—

N. Zealand,	6 t.	James & Shakespeare

Asbestos—

Belgium,	£104	Leach & Co.
Italy,	8	Captain Cunningham

Barytes—

Belgium,	23 cks.	J. L. Lyon & Co
Germany,	22	W. Harrison & Co.

Caoutchouc—

Germany,	1 c.	L. & I. D. Jt. Co.
,,	40	Anderson, Weber, & Smith
Spain,	12	Wallace Bros.
Zanzibar	9	Clarke & Smith
France,	6	Mory & Co.
U. States,	1	J. Walker & Co.
,,	97	L. & I. D. Jt. Co.

Carbolic Acid—

Holland,	3 pkgs.	Phillipps & Graves

Chemicals *(otherwise undescribed)*

Germany,	34 pkgs.	T. H. Lee
,,	5	L. & I. D. Jt. Co.

Cream of Tartar—

Spain,	3 pkgs.	Evans, Lescher, & Co.

Dyestuffs—

Cutch

Rangoon,	3,500 pkgs.	Arracan & Co.

Divi Divi

E. Indies,	217 pkgs.	Culverwell, Brooks, & Co.

Myrabolams

E. Indies,	2,696 pkgs.	Croysda

Saffron

Spain,	1 pkgs.	Majo
,,	2	Pickfo

Tanners' Bark

Germany,	52 t.	Beresfo
Hobart,	28	Rylands & S
Adelaide,	26	Devi
,,	71	Beresfo

Glucose—

France,	200 pkgs.	200 c. Tagan
U. States,	50	50 L. &

120 660 T. M. Duche & Sons
500 500 J. Barber & Co.
750 750 C. Tennant, Sons, & Co.
80 440 H. Johnson & Sons
115 632 Prp. Chmbln.'s Wf.
75 396 W Balchin

ie—
£184 N. S. S. Co., Ltd.
" 124 T. H. Lee

—
80 t. J. Burnett & Sons

:y, 13 pkgs. M. D. Co.
Colours —
6 pkgs. T. H. Lee
2 Flageollet & Co.
5 Bennett S. S. Co., Ltd.
4 cs. Pickford & Co.
te Rock—
50 t. Fox, Roy, & Co.

a, 33 brls. Soundy & Sons
to—
20 cs. G. Rahn & Co.
19 brls. L. & I. D. Jt. Co.

150 c. Petri Bros.
m Sulphate—
32 pkgs. Weatherley, Mead, & Co.

582 t. F. C Hills & Co
—
16 cks. Beresford & Co.

149 cks. A. B. Curtis & Co.
ie, 130 Ross & Deering
nd, 4 Phœnix Whvs. Co.
60 Goad, Rigg, & Co.
7 H. Hill & Sons
a, 281 Hicks, Nash, & Co.
268 J. Owen
ne, 58 J. Greig
240 pkgs. A. B. Curtis & Co.
Acid—
16 pkgs. W. C. Bacon & Co.
15 "
urine—
42 pkgs. Thames S. T. & L. Co., Ltd.
ide—
150 brls. M Ashby, Ltd.
ilte—
8 cks. Spies Bros. & Co.

VERPOOL.

iod ending May 23rd.

—
aven, 4 cs.
140 pkgs. Cunard S. S. Co.
lood—
280 bgs. W. B. Dickinson
's—
obilla
241 bgs. Cockbain, Allardice & Co.
264
276 bgs.
28 cks. German Bank, London
10 pkgs. Cunard S. S. Co.
Divi
239 bgs. Isaacs & Samuel
g, 488
cts
50 cks.
s, 100 cks.
80 t. G. H. Muller & Co
ier
e, 3,531 bgs.
olams
1,744 bgs. Ritchie, Stewart & Co.
3,504
, 2 000 pkts.
s, 50 bgs.
aric
250 bgs. Ralli Bros.
200 sks.

Glucose—
New York, 50 brls. T. M. Duche & Son
" 500
Lead Acetate—
Hamburg, 31 cks.
Manganese—
Havre, 1 ck. Cunard S. S. Co.
Carrizal, 990 t.
Mica—
N. York, 10 brls. Robinson & Allen
Ochre—
Marseilles, 10 kgs. J. Johnston & Co.
Paint—
Philadelphia, 10 brls. A. A. Oil Co., Ltd.
Boston, 24 cs. Mors Le Blanch & Co.
Phosphate—
Ghent, 500 bgs. & qty.
Potash—
Montreal, 13 brls. Makin & Bancroft
" 25 Wilson & Patterson
Potassium Carbonate—
Hamburg, 13 cks.
Pyrites—
Huelva, 1,986 t. Matheson & Co.
" 1,661 t. Tennants & Co.
Rosin—
Wilmington, 2,780 brls.
Baltimore, 502
Saltpetre—
Calcutta, 167 bgs.
Soap—
New York, 113 bxs. E. Thompson
New Orleans, 2,592 brls.
Bari, 329 cs.
Soapstone—
Genoa, 200 bgs. W. Harrison & Co.
Sodium Nitrate—
Pisagua, 10,067 bgs. W. & J. Lockett
Caleta Buena, 6,803 bgs.
Iquique, 5,757 Balfour, Williamson & Co.
Pisagua, 15,743 "
Talc—
Trieste, 10 bgs. F. Parise
Tallow—
New York, 150 hds.
Philadelphia, 100 brls. 72 hds.
Boston, 20
Tartar—
Bordeaux, 4 cks.
Tincal—
Calcutta, 492 bgs.
Turpentine—
Trieste 9 cs.
Varnish—
Havre, 2 cs. 3 cks. Cunard S. S. Co.
Waste Salt—
Hamburg, 100 t. 345,440 kilos.
White Lead—
Belgium, 8 cks.

GLASGOW.

Week ending May 28th.

Barytes—
Rotterdam, 185 cks.
Colours—
Hamburg, 6 brls.
Rotterdam, 21 cks. 6 cs. 1 bx. J. Rankine & Son
Dyestuffs—
Alizarine
Rotterdam, 15 cks.
" 16 J. Rankine & Son
Extracts
Antwerp, 13 cks. 1 cs.
Fustic
Punta Arenas, 300 t.
Tannin
Hamburg, 5 cks.
Glucose—
New York, 150 brls.
Glycerine—
Rotterdam, 5 dms. J. Rankine & Son
Manganese—
Rotterdam, 3 cks. J. Rankine & Son
Potash—
Hamburg, 39 cks.
Rosin—
New York, 1,000 brls.
Saltpetre—
Hamburg, 30 cks.
Soap—
Antwerp, 1 cs.
In transit, 1
Soapstone—
Bordeaux, 50 bgs.
Stearine—
Antwerp, 25 bgs.
Sulphur—
Huelva, 1,600 t. Seville Sulphur & Copper Ore Co.
Tallow—
New York, 20 trcs. Bell, Sons & Co.
" 100 hds.
Tartar—
Bordeaux, 6 cks.
Tartar Emetic—
Hamburg, 4 cks. 2 css.
Tartaric Acid—
Rotterdam, 3 cks. J. Rankine & Son
Ultramarine—
Hamburg, 5 css.
Varnish—
New York, 10 brls.
Waste Salt—
Hamburg, 120 t.
White Lead—
Antwerp, 4 cks.
Rotterdam, 90
Zinc Oxide—
Antwerp, 50 cks.
New York, 100 brls.
Zinc White—
Rotterdam, 150 cks.

HULL.

Period ending May 25th.

Barytes—
Rotterdam, 48 cks. Blundell, Spence & Co.
" 25 Hanger, Watson & Harris
Antwerp, 53 100 bgs. Bailey & Leetham
Caoutchouc—
Hamburg, 1 cs. C. M. Lofthouse & Co.
Chemicals (*otherwise undescribed*)
Rotterdam, 1 cs. W. & C. L. Ringrose
Colours—
Rotterdam, 3 cks. Hutchinson & Son
" 10 1 cs. G. Lawson & Sons
" 5 pkgs. 9 cs. 28 cks. W. & C. L. Ringrose
" 10 cs.
Flushing, 11 15 cks. Zeeland S. S. Co.
Cryolite—
Copenhagen, 3 cks. Wilson, Sons & Co., Ltd.
Dyestuffs—
Alizarine
Rotterdam, 2 cks. Hutchinson & Son
" 19 W. & C. L. Ringrose
Aniline
Rouen, 1 cs. J. Good & Sons
Indigo
Rotterdam, 9 cs.
Myrabolams
Bombay, 6,559 bgs.
Linseed Oil—
Rotterdam, 1 ck. Hutchinson & Son
Plumbago—
Hamburg, 16 brls. G. Lawson & Sons
" 12 cks. F. B. Grotrian & Co.
Sodium Nitrate—
Pisagua, 14,823 bgs
Hamburg, 2,492
Tar—
Bordeaux, 2 cks. Rawson & Robinson
Tartaric Acid—
Rotterdam, 1 ck. G. Lawson & Sons
Turpentine—
Bordeaux, 120 brls.
Ultramarine—
Rotterdam, 20 cs. Hutchinson & Son
White Lead—
Rotterdam, 27 cks.
Antwerp, 34 Bailey & Leetham
Zinc White—
Rotterdam, 10 cks. G. Lawson & Sons

TYNE.

Period ending May 28th.

Barytes—
Rotterdam, 5 cks. Tyne S. S Co
Colours—
Rotterdam, 1 bx. Tyne S. S. Co
Phosphate—
Antwerp, 265 t. Tyne S. S. Co.
Rosin—
Charleston, 822 brls. R. Frazer & Sons
Sodium Silicate—
Rotterdam, 7 bgs. Tyne S. S. Co.

GOOLE.

Week ending May 18th.

Dyestuffs (*otherwise undescribed*)
Hamburg, 26 cks.
Boulogne, 79 12 cs. 36 pkgs.
Dyestuffs—
Alizarine
Rotterdam, 18 cks. 113 pkgs.
Extracts
Ghent, 100 cks.
Madder
Rotterdam, 3 cks.
Farina—
Hamburg, 200 bgs.
Delfszyhl, 1,100
Glycerine—
Rotterdam, 20 pkgs.
Phosphate—
Ghent, 1,632 bgs.
Pitch—
Rotterdam, 44 cks.
Potash—
Hamburg, 14 cks.
Pyrites—
Huelva, 562 t.
Saltpetre—
Rotterdam, 100 bgs.
Soda—
Hamburg, 8 cks.
Waste Salt—
Hamburg, 334 t. 700 bgs.
Zinc Oxide—
Antwerp, 10 brls.

GRIMSBY.

Week ending May 11st.

Chemicals (*otherwise undescribed*)
Antwerp, 7 pkgs.
Dyestuffs (*otherwise undescribed*)
Dieppe, 27 cks.
Farina—
Hamburg, 123 bgs.
Size—
Antwerp, 63 pkgs.
Waste Salt—
Hamburg, pkgs.

EXPORTS OF CHEMICAL PRODUCTS

OF

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Period ending May 24th.

Ammonium Carbonate—

Melbourne,	10 c.	£14
New York,	31 pkgs.	209

Ammonium Chloride—

Sydney,	7 t.	£145
Melbourne,	1	31
Oporto,	2 cks.	9

Ammonium Nitrate—

Sydney,	3 t. 4 c.	£136
Halifax,	1 11	63

Ammonium Sulphate—

Demerara,	50 t.	£541
Hamburg,	50 15 c.	550
Rotterdam,	20 6	190
Dunkirk,	10 3	95

Bisulphide of Carbon—

Stettin,	1 t. 4 c.	£17

Chemicals (*otherwise undescribed*)

Fremantle,	3 c.	£28

Citric Acid—

Hamburg,	1 t. 10 c. 1 ck.	£297

Copper Sulphate—

Naples,	10 t.	£152

Disinfectants—

Sydney,	41 cs.	£162
Montreal,	5 cks.	10

Flowers of Sulphur—

Cape Town,	40 t. 3 c. 825 pkgs.	£1,220

Manure—

Carthagena,	148 t. 4 c.	£1,184
Barcelona,	9 18	80
Valencia,	309 8	2,471
Alicante,	14 8	112
Tarragona,	14 8	112
St. Kitts,	32	310
Barbadoes,	148 6	1,435
Demerara,	70	750
Gothenburg,	19 9	59

Potassium Chlorate—

Melbourne,	12 c.	£37
Lisbon,	3 pkgs.	£10

Saltpetre—

St. Michaels,	16 c.	£16
Melbourne,	1 t.	22
Oporto,	9 11	195

Sheep Dip—

Sydney,	73 cs.	£70
Natal,	18	31

Soda Crystals—

Sydney,	1 t. 3 c.	£9
Algoa Bay,	1 2	4

Sodium Acetate—

Sydney,	9 cks.	£82

Sodium Bicarbonate—

Sydney,	1 t.	£7

Sodium Sulphate—

Norrkoping,	200 t.	£300

Sodium Tartrate—

Montreal,	11 c.	£33

Sulphur—

Cape Town,	6 t. 5 c.	£72
Natal,	8 7	87
New Castle,	1	9

Sulphuric Acid—

Natal,	41 cs.	£40
Algoa Bay,	100 drs.	140

LIVERPOOL.

Period ending May 24th.

Alum Cake—

Calcutta,	1 t. 13 c.	£7
Melbourne,	5 1	15

Alumina Sulphate—

Calcutta,	17 c.	£5

Ammonium Carbonate—

Riga,	9 c. 2 q.	£16
Fairwater,	2 t. 8 1	79
Danzig,	12 1	22
Gothenburg,	13 1	22

Ammonium Chloride—

Alexandria,	2 t. 19 c. 2 q.	£59
Philadelphia,	19 18 3	471
Smyrna,	1 9	49
Antwerp,	1 18 2	71

Barytes Sulphate—

Volo,	7 t. 3 q.	£22

Bleaching Powder—

Ancona,	48 cks.	
Baltimore,	213	
Boston,	804	
Calcutta,	74 100 cs.	
Constantinople,	30	
Corunna,	8 brls.	
Genoa,	205	
Hamburg,	20 kgs.	
Havre,	12	
New York,	148	
Philadelphia,	48	
Trieste,	5	

Boracic Acid—

Antwerp,	4 cks.	

Borax—

Rotterdam,	4 t. 10 c.	£132
Valparaiso,	17 3 q.	28
Valencia,	1 1 2	32
Hamburg,	4 cks.	

Calcined Magnesia—

Trieste,	1 cs.	

Calcium Chloride—

Boston,	10 t. 1 c.	£22

Carbolic Acid—

New York,	2 t. 5 c.	£122

Caustic Potash—

Montreal,	1 t. 1 c.	£22

Caustic Soda—

Almeria,	6 dms.	
Bahia,	40	
Baltimore,	135 brls.	
Barcelona,	100 100	
Bari,	45	
Beyrout,	4	
Boston,	25	
B. Ayres,	5	
Cadiz,	9 pkgs.	
Genoa,	347	
Hamburg,	60	
Havre,	18	
La Guayra,	40	
Leghorn,	240	
Lisbon,	28	
Mayumba,	35	
M. Video,	50	
New York,	550 150	
Oporto,	45	
Palermo,	50	
Penang,	30	
Porto,	70	
Rangoon,	7	
Rio Grande,	67	
Rotterdam,	30 24 kgs.	
Rouen,	70	
St. Petersburg,	100	
Salonica,	36	
Seville,	250	
Trieste,	70	
Valparaiso,	25	
Zanzibar,	30	

Copperas—

Piræus,	5 t. 5 c.	£10

Copper Sulphate—

Venice,	1 t. 14 c.	£25
Ghent,	24 15	335
Bordeaux,	12 2 2 q.	165
Genoa,	19	289
Naples,	6 2	81
Leghorn,	1	14
Marseilles,	24 14	343

Glycerine—

Rotterdam,	16 t. 19 c.	£362

Gypsum—

Leghorn,	10 t.	£35
New York,	70 10	251

Magnesium Sulphate—

Havana,	10 brls.	
Naples,	2 cks.	

Oxalic Acid—

Dunkirk,	5 t. 4 c. 1 q.	£140
Antwerp,	10 8	285

Paint—

Batanga,	4 cs.	
Beyrout,	50 kgs.	
Boca,	12 cks.	
Bremerhaven,	13	
B. Ayres,	2	
Cape Town,	5	
Ceara,	19 pkgs.	
Coquimbo,	80 cs.	
Genoa,	51 3 dms.	
Guantanamo,	1	
Halifax,	1	
Hamburg,	2 21	
Iloilo,	6	
Kingston, O.,	108	
Loanda,	9 brls.	
Malta,	44	
Manaos,	2	
Manilla,	20 124 500	
Matanzas,	4	
Para,	37 20	
Port Natal,	8	
Rangoon,	1	
Rotterdam,	50 hgs.	
Rouen,	10	
San Francisco,	267	
San Sebastian,	20	
Sierra Leone,	97 10 dms.	
Singapore,	42	
Talcahuano,	42	
Trieste,	8	
Valparaiso,	84 58 4 brls.	
Vera Cruz,	8	
Vigo,	7	

Painters' Colours—

Akassa,	1 cs. 32 kgs.	
Alexandria,	15 brls.	
Bahia,	55	
Bona Vista,	90	
B. Ayres,	18 cks.	
New York,	150	
Odessa,	4	

Picric Acid—

New York,	1 t. 2 c.	£113

Pitch—

New York,	25 cks.	
Valparaiso,	34 t. 12 c.	

Potash—

Rotterdam,	17 c. 1 q.	£19

Potassium Carbonate—

Montreal,	10 c.	£10

Potassium Chlorate—

Shanghai,	1 t. 10 c.	£69
Yokohama,	2 10	114
Antwerp,	2	95
Bari,	2 16	118
M. Video,	12	27
Hong Kong,	1 16	89

Potassium Sulphate—

Teneriffe,	5 t. 1 q.	£56

Salt—

Algoa Bay,	27 t.	
Bakana,	30	
Boston,	525	
Buguma,	10	
Calcutta,	470	
Ghent,	60	
Hamburg,	150	
Kingston, Ja.,	5	
Montreal,	165	
Newport News,	550	
New York,	65	
Old Calabar,	50	
Opobo,	20	
S. John's, Nfld.,	100	
Sydney,	315	

Salt Cake—

Philadelphia,	75 t. 6 c.	£201
Baltimore,	120 15	288
Lisbon,	15 cks.	

Saltpetre—

Teneriffe,	9 c.	£10
G. Canary,	1 1	23
Piræus,	10 10	227
Maranham,	5 2 q.	7

Sheep Dip—

Punta Arenas,	80 drs. 20 cks.	£265
B. Ayres,	3,400	708
Owen Sound,	1 t. 5 c.	28

Soap—

Accra,	50 bxs.	
Alexandria,	3 cs.	
Algiers,	120	
Annato Bay,	30	
Antigua,	50	
Barbadoes,	800	
Bathurst,	36	
Belize,	175	
Bombay,	550 5	
B. Ayres,	1	
Callao,	42 1	
C. C. Castle,	50 1	
Cape Town,	500	
Chama,	300	
Curacao,	50	
E. London,	300	
Falmouth, Ja.,	171	
Gibraltar,	400	
G. Bassa,	160	
Iloilo,	1	
Kingston, Ja.,	2,625	2 bl
Las Palmas,	66	
Madeira,	5	
New York,	12 cks.	
Opobo,	560	
Para,	250	
Philadelphia,	50	
Port Antonio,	120	
Port Natal,	100	
Rangoon,	30 1 cs.	
Rotterdam,	51	
St. Lucia,	150	
Salt Pond,	50	
San Fernando,	300	
San Juan,	300	
Savanilla,	4	
Shanghai,	1,352	
Sierra Leone,	250	
Singapore,	1,438	
Sourabaya,	1,300	
Stettin,	14	
Trinidad,	500	
Truxillo,	310	

Soda Ash—

Bahia,	5 cks. 10 brls.	
Baltimore,	908	400
Boston,	234	1,440
Cadiz,	3	
Callao,	69	
Canada,		170
Danzig,	6	
Genoa,	5	
Hamburg,	25	
Maranham,	20 50	
Montreal,	94	
New York,	720	800
Oporto,	10	
Philadelphia,	653	240
Santander,	22	
Seattle,	64	
Sydney,	11	
Trieste,	10	

Soda Crystals—

Calcutta,	72 brls.	
Canada,	220 kgs.	
Montreal,	127	
Philadelphia,	280	
St. John's, N.B.,	5	
Valparaiso,	25	

Sodium Arseniate—

New York,	3 cks.	

Sodium Biborate—

Stettin,	4 cks.	

Sodium Bicarbonate—

Amsterdam,	25 kgs.	
Antwerp,	4 cks.	
Bourgas,	20 bls.	
B. Ayres,	10 cs.	
Cairo,	30	
Calcutta,	200	
Canada,	75	
Constantinople,	50	
Copenhagen,	75 21	
Galatz,	10	
Genoa,	5	
Gothenburg,	50	
Hamburg,	22 7	
Mayumba,	770 19	
Montreal,	35	
Penang,	9	
Salonica,	20	
Smyrna,	20	
Vigo,	8	

Sodium Carbonate—

Boston,	252 brls.	
New York,	339	

Sodium Chlorate—

Hamburg,	1 t.	
Rotterdam,	5 brls. 40 kgs.	

Sodium Nitrate—
Leghorn, 1 t. 15 c. £14
Lisbon, 9 19 81
Malaga, 9 1 3 q. 81
Oporto, 2 11 1 23
Santander, 1 5 13
Sodium Silicate—
Barcelona, 70 brls.
Havre, 4
Leghorn, 90
Lisbon, 32 cks.
Malaga, 14
Montreal, 32
Naples, 5
Sulphur—
Demerara, 7 t. 6 c. 3q. £53
Kingston, Ja., 15 1 7
Tallow—
Rotterdam, 33 cks.
Tar—
Honolulu, 20 brls.
Manilla, 25 dms.
St. John's, Nfld, 30
Sierra Leone, 86½
Tartaric Acid—
Havana, 1 t. £126
Varnish—
Alicante, 43 cs.
Cape Town, 2 1 ck.
Cavite, 5 bxs.
Genoa, 5 brls.

HULL.

Week ending May 28th.

Alkali—
Libau, 100 kgs.
Riga, 25
Alum—
Drontheim, 350 slbs.
Aluminium—
Antwerp, 1 pcl.
Rotterdam, 1 cs. 1 ck.
Aniline Colours—
Rotterdam, 1 kg.
Benzol—
Rotterdam, 6 dms.
Bleaching Powder—
Bremen, 15 cks.
Danzig, 147
Gothenburg, 13
Stettin, 30
Borax—
Amsterdam, 5 cks.
Caustic Soda—
Danzig, 102 drms.
Riga, 44
St. Petersburg, 6 cks.
Stettin, 5
Chemicals (*otherwise undescribed*)
Amsterdam, 16 pkgs.
Abo, 4 cks.
Bremen, 20 pkgs.
Bordeaux, 20 cs.
Christiania, 9 cs. 28 cks. 12 pkgs. 1,591 slbs.
Danzig, 28 kgs. 8 cks. 35 dms.
Gothenburg, 30
Hamburg, 66 cs.
Konigsberg, 25 pks.
Libau, 3 cs.
Rouen, 15 cks
Rotterdam, 41 30 cs.
St Petersburg, 16 3
Stettin, 154 229 pkgs.
Cottonseed Oil—
Antwerp, 600 c.
Bremen, 333
Copenhagen, 102
Flushing, 134
Gothenburg, 105
Hamburg, 570
Rotterdam, 501
Stockholm, 98
Dyestuffs (*otherwise undescribed.*)
Antwerp, 1 cs.
Amsterdam, 1
Dunkirk, 1 ck.
Hamburg, 2
St. Petersburg, 50
Stettin, 173 bgs.
Linseed Oil—
Bremen, 192 c.
Copenhagen, 45
Christiania, 543
Drontheim, 163
Hamburg, 205
Rotterdam, 54
Manganese—
Danzig, 73 cks.
Manure—
Christiania, 50 bgs.
Naphtha—
Antwerp, 10 cks.
Copenhagen, 15
Ochre—
Copenhagen, 3 cks.
Gothenburg, 1
Oxygen—
New York, 250 cyldrs.
Paint—
Christiania, 1 cs.
Painters' Colours—
Antwerp, 5 cs. 81 cks. 38 pks.
Amsterdam, 1 5
Abo, 2 cks.
Bremen, 20 dms.
Copenhagen, 1 cs. 7 cks. 40 pks.
Christiania, 2 25 142 pkgs.
Danzig, 5
Drontheim, 5
Gothenburg, 1
Hamburg, 2 7
Konigsberg, 20
New York, 85
Rouen, 15
Rotterdam, 22 cks. 4 cs. 4 dms. 48 pkgs.
Reval, 1 ck.
Stockholm, 10
St. Petersburg, 10
Stettin, 65 25 pks.
Paraffin Wax—
Danzig, 100 bgs.
Pitch—
Antwerp, 1,760 c.
Dunkirk, 80 t.
Rouen, 2 bls. 1 ck.
Salt—
St. Petersburg, 50 bgs.
Torshavn, 10 t.
Soap—
Christiania, 30 cs.
Rotterdam, 16 dms.
St. Petersburg, 6 cs.
Tallow—
Amsterdam, 15 cks.
Gothenburg, 3
Tar—
Aalesund, 3 cks.
Amsterdam, 16
Copenhagen, 10
Flushing, 3
Gothenburg, 150
Hamburg, 3
Rotterdam, 2
Ultramarine—
Antwerp, 1 cs.
Varnish—
Antwerp, 21 cs.
Amsterdam, 10 cks.
Copenhagen, 10 cs.
Christiania, 1 1 ck.
Gothenburg, 7
Hamburg, 6
Rotterdam, 1 6 3 brls.

GLASGOW.

Period ending May 28th.

Acetic Acid—
Lisbon, 3 t. 19½ c. £31
Acid—
Bombay, 251 t. 17 c. £2,410
Ammonium Bichromate—
Rouen, 10 c. £25
Ammonium Chloride
Trinidad, 10 t. £100
Ammonium Sulphate—
New York, 2 t. ¼ c. £21
Trinidad, 244 16 2,626
Demerara, 37 2 400
Cullera, 121 10¼ 1,353
Charente, 101 1 1,010
Barium Chloride—
New York, 2 t. 7½ c. £17
Bichrome—
Genoa, 326½ c. £533
Rouen, 795½ 1,130
Antwerp, 30 t. 18½ c. £579
Borax—
Quebec, 13 t. 3¼ c. £435
Creosote Oil—
Christiania, 130 brls. £65
Huelva, 12 t. 10 c. £22 10s.
Dyestuffs—
Cutch
Antwerp, 1 t. 5 c. £35 10s.
Extracts
Quebec, 142 c. £197
Extract of Indigo
New York, 3 t. 7¾ c. £70
Lead Acetate—
Quebec, 2 t. 3½ c. £53
Bombay, 4 16 78
Linseed Oil—
Bombay, 3 t. £56
Liquid Ammonia—
Monte Video, 1,200 lb. £20
Litharge—
Turkey, 2 t. 10 c. £42
Magnesium Sulphate—
Rouen, 5 t. 3½ c. £24
Manure—
Trinidad, 210 t. £1,522
New York, 199 2½ c. 44
Nitrate of Lead—
Quebec, 3 t. 18¾ c. £70
Paint—
Monte Video, 3 t. ¼ c. £50
Demerara, 1 5 £25 18s.
Valparaiso, 27 18 519
Bombay, 9 7¼ 77
Painters' Colours—
New York, 2 t. 19 c. £64
Paraffin Wax
Japan, 61 t. 12¾ c. £1,542
Lisbon, 2 11½ 61
Russia, 10 5¼ 291
Antwerp, 13¼ 23
Pitch—
Caen, 450 t.
Valparaiso, 75 ¾ c. £135
Rouen, 60 65
Antwerp, 198 12 248
Boston, 35 17 80
Russia, 63 15 120
Potassium Iodide—
Bombay, 2 c. £55
Potassium Bichromate
Philadelphia, 165½ c. £290
Bombay, 2 t. 12½ 81
Turkey, 12½ £17 10s.
Potassium Sulphate—
Trinidad, 5 t. 9¾ c. £55
Genoa, 5 2¾ 130
Rosin—
Calcutta, 78 c. £21
Salt—
Valparaiso, 3 t. 17¾ c. £35 10s.
Salt Cake—
Antwerp, 515 t. 4 c. £1,020
Soap—
China, 1 t. 17¾ c. £23
Calcutta, 2 28
Bombay, 10 8 170
Antwerp, 2 4 40
Soda Ash—
Philadelphia, 3,018 c. £872
Sodium Bichromate—
Genoa, 394¼ c. £430
Bombay, 2 t. 14½ 59
Rouen, 60 3½ 1,320
Sulphuric Acid—
Demerara, £25
Madras, 73
Bombay, 8 t. 8¾ c. £42
Superphosphate—
Trinidad, 38 t. 14¾ c. £85
Cullera, 49 122
Tar—
Philadelphia, 50 t. £60
Calcutta, 10 14 c. £25 10s.
Bombay, 1 10½ £40
Tartar Emetic—
Bombay, 6 c. £24
Varnish—
Huelva, 4 c. £24
White Lead—
Adelaide, £127 15s.
Huelva, 1 t. 2 c. £22

TYNE.

Period ending May 25th.

Alizarine—
New York, 1 t. 19 c.
Alkali—
Gothenburg, 12 t. 4 c.
Hamburg, 4 14
Aalborg, 1 5
Odense, 5 11
Alumina Sulphate—
New York, 21 lbs.
Ammonia—
New York, 50 t.
Antimony—
Hamburg, 2 t.
New York, 88
Barium Chloride—
New York, 15 t. 4 c.
Barytes Carbonate—
Hamburg, 100 t.
New York, 50
Bleaching Powder—
St. Petersburg, 129 t. 5 c.
Riga, 90
Gothenburg, 45 6
Antwerp, 44 7
Christiania, 1 5
Aalborg, 6
Carbolic Acid—
Odense, 12 c.
Caustic Soda—
St. Petersburg, 29 t.
Gothenburg, 4 19 c.
Hamburg, 15 13
Antwerp, 4 11
New York, 72 10
Creosote—
Aalborg, 3 c.
Litharge—
Riga, 4 t. 1 c.
Christiania, 5 3
Magnesia—
Hamburg, 3 c.
Antwerp, 5
Naphthalene—
Riga, 25 t. 2 c.
Ochre—
Christiania, 8 t. 4 c.
Paint—
Antwerp, 1 t. 6 c.
New York, 5 16
Potassium Chlorate—
Riga, 4 c.
Soda Ash—
Gothenburg, 25 t.
Hamburg, 7 10 c.
Christiania, 12 16
Odense, 5 8
Sodium Hyposulphite—
Odense, 1 t. 10 c.
Sodium Sulphate—
Gothenburg, 5 t. 2 c.
Sulphur—
Riga, 45 t.
Gothenburg, 100
Antwerp, 10 3 c.
Christiania, 25
Superphosphate—
Riga, 91 t. 17 c.
Tallow—
Hamburg, 4 t. 10 c.
Zinc Ashes—
Antwerp, 12 t. 1 c.

GOOLE.

Week ending May 14th.

Chemicals (*otherwise undescribed*)
Boulogne, 8 drs.
Rotterdam, 24 cks.
Coal Products (*otherwise undesc'd.*)
Boulogne, 52 cks.
Rotterdam, 12
Creosote—
Kuysna, 1,720 cks.
Dyestuffs (*otherwise undescribed*)
Boulogne, 3 cks.
Ghent, 4 drs.
Hamburg, 1 ck. 1 cs.
Manure—
Bruges, 100 bgs.
Ghent, 100
Rotterdam, 2 cks.

GRIMSBY.

Week ending May 21st.

Chemicals (*otherwise undescribed*)
Dieppe, 6 pkgs.
Hamburg, 10 os. 5 cks.
Dyestuffs (*otherwise undescribed*)
Dieppe, 1 ck.
Naphtha—
Dieppe, 84 cks.

PRICES CURRENT.

WEDNESDAY, June 8th, 1892

Prepared by Higginbottom and Co., 116, Portland Street, Manchester.

The values stated are f.o.r. *at maker's works, or at usual ports of shipment in U.K. The price in different localities may vary.*

	£	s.	d.
Acids:—			
Acetic, 25 % and 40 % .. .. per cwt.	7/- & 11/-		
,, Glacial .. .. ,,	50/-		
Arsenic S.G., 2000° .. .. ,,	0	14	6
Fluoric .. .. per lb.	0	0	3¼
Muriatic (Tower Salts), 30° Tw. .. .. .. per bottle	0	0	10
,, (Cylinder), 30° Tw. .. .. ,,	0	3	0
Nitric 80° Tw. .. .. per lb.	0	0	2¼
Nitrous .. .. ,,	0	0	1¾
Oxalic .. .. nett ,,	0	0	3
Phosphoric, 1750° .. .. ,,	0	1	2½
Picric .. .. ,,	0	0	10¼
Sulphuric (fuming 50 %) .. .. per ton	15	10	0
,, (monohydrate) .. .. ,,	5	10	0
,, (Pyrites, 168°) .. .. ,,	3	5	0
,, (,, 150°) .. .. ,,	1	5	0
,, (free from arsenic, 145°) .. .. .. ,,	1	6	0
Sulphurous (solution) .. .. ,,	2	15	0
Tannic (pure) .. .. per lb.	0	1	2
Tartaric .. .. ,,	0	0	11¼
Arsenic, white powdered .. .. nett per ton	11	17	6
Alum (loose lump) .. .. ,,	5	5	0
Alumina Sulphate (pure) .. .. ,,	5	0	0
,, ,, (medium qualities) .. .. .. ,,	4	15	0
Aluminium .. .. per lb.	2s. 8d. to	0	3 2
Ammonia, ·880=28° .. .. per lb.	0	0	3
,, =24° .. .. ,,	0	0	1¾
,, Carbonate .. .. nett ,,	0	0	3¼
,, Muriate .. .. per ton	21	0	0
,, ,, (sal-ammoniac) 1st & 2nd .. per cwt.	35/- & 33/-		
,, Nitrate .. .. per ton	40	0	0
,, Phosphate .. .. per lb.	0	0	10½
,, Sulphate (grey) London .. .. .. per ton	9	17	6
,, ,, (grey) Hull .. .. ,,	9	15	0
Aniline Oil (pure) .. .. per lb.	0	0	6¾
Aniline Salt ,, ... ,,	0	0	6¼
Antimony .. .. per ton	45	10	0
,, (tartar emetic) .. .. per lb.	0	1	0
,, (golden sulphide) .. .. ,,	0	0	10
Barium Chloride .. .. per ton	7	10	0
,, Carbonate (native) .. .. ,,	3	10	0
,, Sulphate (native levigated) .. .. .. ,,	45/- to 75/-		
Bleaching Powder, 35 % .. .. nett ,,	7	10	0
,, Liquor, 7 % .. .. ,,	2	10	0
Bisulphide of Carbon .. .. ,,	11	15	0
Chromium Acetate (crystal) .. .. per lb.	0	0	6
Calcium Chloride .. .. per ton	2	5	0
China Clay (at Runcorn) in bulk .. .. .. ,,	17/6 to 35/-		
Coal Tar Dyes:—			
Alizarine (artificial) 20 % .. .. per lb.	0	0	8¼
Magenta .. .. ,,	0	3	9
Coal Tar Products			
Anthracene, 30 % A, f.o.b. London .. per unit per cwt.	0	0	10½
Benzol, 90 % nominal .. .. .. per gallon	0	1	10
,, 50/90 ,, ... ,,	0	1	5
Carbolic Acid (crystallised 40°) .. .. . per lb.	0	0	4⅞
,, (crude 60°) .. .. per gallon	0	1	2
Creosote (ordinary) .. .. ,,	0	0	1
,, (filtered for Lucigen light) .. .. .. ,,	0	0	2
Crude Naphtha 30 % @ 120° C. .. .. .. ,,	0	0	9
Grease Oils, 22° Tw. .. .. per ton	2	2	0
Pitch, f.o.b. Liverpool or Garston .. .. .. ,,	1	8	0
Solvent Naphtha, 90 % at 160° .. .. .. per gallon	0	0	11
Coke-oven Oils (crude) .. .. ,,	0	0	3
Copper .. .. per ton	46	3	9
,, Sulphate .. .. ,,	15	15	0
,, Oxide (copper scales) .. .. ,,	45	0	0
Glycerine (crude) .. .. ,,	13	0	0
,, (distilled S.G. 1250°) .. .. ,,	45	0	0
Iodine .. .. nett, per oz.	0	0	9
Iron Sulphate (copperas) .. .. per ton	1	12	6
,, Sulphide (antimony slag) .. .. ,,	2	0	0
Lead (sheet) for cash .. .. ,,	12	0	0
,, Litharge Flake (ex ship) .. .. ,,	14	0	0
,, Acetate (white ,,) .. .. ,,	25	10	0
,, ,, (brown ,,) .. .. ,,	17	5	0
,, Carbonate (white lead) pure .. .. .. ,,	20	0	0
Nitrate .. .. ,,	20	0	0
Lime, Acetate (brown) .. .. per ton	5	17	6
,, ,, (grey) .. .. ,,	10	15	0
Magnesium (ribbon and wire) .. .. per oz.	0	2	3
,, Chloride (ex ship) .. .. per ton	2	7	6
,, Carbonate .. .. per cwt.	1	17	6
,, Hydrate .. .. per ton.	17	0	0
,, Sulphate (Epsom Salts) .. .. .. per ton	2	19	0
Manganese, Sulphate .. .. ,,	17	15	0
,, Borate .. .. per cwt.	2	12	6
,, Ore, 70 % .. .. per ton	4	5	0
Methylated Spirit, 61° O.P. .. .. per gallon	0	2	6
Naphtha (Wood), Solvent .. .. ,,	0	4	6
,, ,, Miscible, 60° O.P. .. .. .. ,,	0	4	4½
Oils:—			
Cotton-seed .. .. per ton	19	10	0
Linseed .. .. ,,	20	0	0
Lubricating, Scotch, 890°—895° .. .. .. ,,	7	5	0
Petroleum, Russian .. .. per gallon	0	0	4½
,, American .. .. ,,	0	0	5½
Potassium (metal) .. .. per oz.	0	3	7
,, Bichromate .. .. nett per lb.	0	0	4½
,, Carbonate, 90% (ex ship) .. .. .. per ton	18	0	0
,, Chlorate .. .. per lb.	0	0	7
,, Cyanide, 98% .. .. ,,	0	2	2
,, Hydrate (Caustic Potash) 80/85 % .. per ton	22	10	0
,, ,, (Caustic Potash) 75/80 % .. ,,	21	0	0
,, ,, (Caustic Potash) 70/75 % .. ,,	20	15	0
,, Nitrate (refined) .. .. per cwt.	1	2	6
,, Permanganate .. .. per cwt.	3	10	0
,, Prussiate Yellow .. .. per lb.	0	0	10
,, Sulphate, 90 % (ex ship) .. .. .. per ton	9	15	0
,, Muriate, 80 % (do.) .. .. .. ,,	7	17	6
Silver (metal) .. .. per oz.	0	3	4½
,, Nitrate .. .. ,,	0	2	10
Sodium (metal) .. .. per lb.	0	3	4
,, Carb. (refined Soda-ash) 48 % .. nett per ton	6	2	6
,, ,, (Caustic Soda-ash) 48 % . ,, ,,	5	5	0
,, ,, (Carb. Soda-ash) 48% .. .. ,, ,,	5	7	6
,, ,, (Carb. Soda-ash) 58 % .. .. ,, ,,	6	5	0
,, ,, (Soda Crystals) .. .. .. ,, ,,	3	9	0
,, Acetate (ex-ship) .. .. ,,	16	5	0
,, Arseniate, 45 % .. .. ,,	11	0	0
,, Chlorate .. .. per lb.	0	0	8
,, Borate (Borax) .. .. nett, per ton.	29	0	0
,, Bichromate .. .. ,, per lb.	0	0	3¾
,, Hydrate (77 % Caustic Soda) (f.o.b.) nett pr. ton (10 ton lots)	11	10	0
,, ,, (74 % Caustic Soda) ,, ,, ,, (10 ton lots)	11	5	0
,, ,, (70 % Caustic Soda) ,, ,, ,, (10 ton lots)	10	5	0
,, ,, (60 % Caustic Soda) .. ,, ,, (10 ton lots)	9	2	6
,, ,, (60 % Caustic Soda, cream) (f.o.b.) ,, (10 ton lots)	8	17	6
,, Bicarbonate .. .. ,,	6	12	6
,, Hyposulphite .. .. ,,	7	15	0
,, Manganate, 25% .. .. ,,	11	10	0
,, Nitrate (95 %) ex-ship Liverpool .. .. per cwt.	0	7	10½
,, Nitrite, 98 % .. .. per ton	30	0	0
,, Phosphate .. .. ,,	15	10	0
,, Prussiate .. .. per lb.	0	0	7¾
,, Silicate (glass) .. .. per ton	5	7	0
,, ,, (liquid, 100° Tw.) .. .. .. ,,	4	5	0
,, Stannate, 40 % .. .. per cwt.	3	5	0
,, Sulphate (Salt-cake) .. .. per ton.	1	16	6
,, ,, (Glauber's Salts) .. .. ,,	1	15	0
,, Sulphide .. .. ,,	7	15	0
,, Sulphite .. .. ,,	6	12	6
Strontium Hydrate, 100% .. .. ,,	8	10	0
Sulphocyanide Ammonium, 95 % .. .. per lb.	0	0	7¾
,, Barium, 95 % .. .. ,,	0	0	5
,, Potassium .. .. ,,	0	0	7¼
Sulphur (Flowers) .. .. per ton.	8	0	0
,, (Roll Brimstone) .. .. ,,	6	5	0
,, Brimstone: Best Quality (nominal) .. ,,	5	0	0
Superphosphate of Lime (26 %) .. .. ,,	2	7	6
Tallow .. .. ,,	27	0	0
Tin (English Ingots) .. .. ,,	101	0	0
,, Crystals .. .. per lb.	0	0	7
Zinc (Spelter) .. .. per ton	22	10	0
,, Chloride (solution, 96° Tw.) .. .. .. ,,	6	10	0

THE

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AD VERTISEMENT.

G man (age 21) seeks situation as Chemist, in a works or as analyst. Has had four years' thorough scientific the City and Guilds' Institute, South Kensington, and holds their Chemical Engineer. Address, Briggs, Central Institute, South London.

CITY OF HEREFORD.

TO TAR DISTILLERS AND OTHERS.

Gas Management Committee of the Corporation TENDERS for the surplus TAR produced at their Works for a term from the 1st July next.
and printed Form of Tender may be obtained on application to the

ndorsed "Tender for Tar," are to be sent in, addressed to the Chair- as Management Committee, Mansion House, Hereford, by Satutday,

ittee do not bind themselves to accept the highest or any tender.
By order,
WILLIAM PARLBY,
Gas Engineer and Manager.

s, Hereford,
th, 1892.

AR REFINERS, MANUFACTURING CHEMISTS, AND OTHERS.

RS. FULLER, HORSEY, SONS, AND ELL are instructed by Messrs. David Martineau and Sons (Limited) centrating their business at Clyde Wharf, Victoria Docks) to SELL N, in lots, on the PREMISES, 6, Christian-street, E., on TUES- th, and following days, at Twelve precisely each day, the surplus MACHINERY, including three copper vacuum pans, with con- t blow-up cisterns, 21 centrifugal machines, elevator, tramways, five bag filters, three scum ditto, four receivers, 69 cisterns and tanks, erator, water-softening apparatus, loaf-sugar pressing machine, r press and air pump, two agitating tanks, Korting's blower, five d hoists, 10 lead-lined cisterns, sulphur plant, eight charcoal re- 20 charcoal wagons, 29 charcoal cisterns, five Wilson's gas pro- Lancashire boilers, two Root's boilers, two pumping engines, 20-horse engine and pair vacuum pumps, 10-horse power ditto and pair gun nps, 16-horse power horizontal engine, two auxiliary beams and two pumps, pair horizontal engines, four vertical, horizontal, and wall n metal pumps, iron bridge, the iron fittings of six drying stores weighbridge, copper, lead, and iron piping, 16,000 iron moulds' ing, loose tools, and other effects.—May be viewed the day preceding s had on the premises, and of the Auctioneers, 11, Billiter-square, E.C.

Advertisements.

dvertisements of Situations Vacant, Premises on Sale or To be Let s Wants, and Specific Articles for Sale by Private Contract are e *Chemical Trade Journal* at the following rates:—

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ments of Situations Wanted are inserted at one-half the when prepaid, viz.:—

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rtisements, Announcements in the Directory Columns, and all Adver- prepaid, are charged at the Tariff rates which will be forwarded on

CURRENT TOPICS.

SECRET PROCESSES.

IN the present day of scientific discovery and general enlightenment, it seems almost an impossibility for the hocus pocus of the early days of science to still exist. At one time secrecy went hand-in-hand with new processes; but, in the present day, it is quite out of the case. The value of secret processes has received a severe shock by the experience gained from the electrical purification of sugar and similar nostrums.

Still, however, such peculiarities do occasionally present themselves; in this instance the mysterious method hailing from Cheshire.

The discolouration of the cheese of Cheshire, which has enjoyed such an excellent reputation from time immemorial, has caused the Cheshire Chamber of Agriculture to make experiments, with a view to overcoming this difficulty.

In addition to their own researches, they are now the recipients of an offer by which the discolouration can be avoided; the possessor of the secret being disposed to impart his peculiar knowledge for a remuneration.

In discussing the matter, there seemed to be some doubt as to the likelihood of success attending the use of this secret process.

To what extent the doubts of the chamber are warrantable, the result of the experiments with twenty best cheeses alone can show; but, in our opinion, if the farmers of Cheshire would give more attention to the selection of the sites for dairies, so as to ensure perfect immunity from contact with the salubrious odours which are always more or less prevalent in a farmstead, there would be a great deal less heard of the troubles arising from the discolouration of cheese.

Although every precaution is taken to secure scrupulous cleanliness in the dairy, if the atmosphere in the same is laden with bacteria, the contamination of the milk will almost inevitably follow, giving results which are apparently inexplicable.

THE GAS INSTITUTE.

The twenty-ninth annual meeting of the Incorporated Gas Institute was held in London this week.

The president, Mr. W. A. Valon, in addressing the members, called attention to several matters which are of importance to chemical manufacturers, since they tend to show that it is not only the manufacturer who is to blame for the destruction of our vegetation, and the smoke nuisance.

In regard to the difficulties which arise from the consumption of coal in the shape of smoke and sulphurous acid, the president very strongly advocated the use of coke as a fuel, since by using coke a good deal of the black fog, which is ever present in large towns and cities during the winter months, would cease to prevail.

This, however, does not overcome the sulphur difficulty. The calculated amount of sulphur thrown into the air during a year in London alone is in round figures a hundred thousand tons, the whole of which is produced by the combustion of coal. It is pleasing to hear those connected with the gas industry advising the consumption of coke, as it is high time the heat and light giving powers of coal were used to better advantage. This to a large extent would be accomplished by gas, from which practically all the sulphur is removed, being used for heating as well as lighting, the residual coke likewise being utilised for heating where gas is not applicable or too costly.

It is important, therefore, that this may be carried out, to make gas sufficiently cheap to allow of its being used, and to leave no excuse on the plea of cost, for those living in populous districts to continue burning coal to such disadvantage both to themselves and the community at large.

Since the president has called the attention of the members of the Institute to this matter in such an emphatic way, it may perhaps be not too soon to anticipate something definite being done in those quarters most deeply involved, in order to assist the practical utilisation of the suggestions thrown out by the president of the Institute.

THE SOAPMAKERS' ASSOCIATION.

The necessity for combination in order to meet the ever-growing tide of competition leads to the formation of all kinds of associations for the advancement of trade interests.

Among, the many the above-mentioned association is one which has quietly but effectually done much good in its special field. Last week the twenty-fifth anniversary was held, thus completing the first quarter of a century during which this association has been in existence.

In another column a full account of the proceedings of the association will be found, along with the names of the principal firms represented.

The meeting was successfully carried out, and the association gives every promise of rendering still further material assistance to the soap industry.

THE MERSEY AND IRWELL JOINT COMMITTEE.

A MEETING of this Committee was held at the offices, 44, Mosley-street, Manchester, on Monday last, 13th inst., the Right Hon. T. J. Hibbert, the chairman, presiding.

The Clerk (Mr. F. C. Hulton) reported that the Mersey and Irwell Prevention of Pollution Bill had been before the Police and Sanitary Committee, the preamble of the bill had been proved, and that it was ordered to be reported to the House. On the 3rd June a proposal to suspend the standing orders was opposed by Sir Henry James on behalf of the borough of Bury, but upon a division 71 voted for and 6 against, and the bill was then read a third time without a division. It would be read a first time in the House of Lords that day. Prior to the bill being heard before the Committee a conference was held with the manufacturing and mining interests, and amendments were agreed to, whereupon the opposition of those bodies was withdrawn, the only opponents to the bill being the Corporations of Bury, Bacup, Rawtenstall, and Heywood. The bill as finally passed contained the amendments agreed to with the manufacturers, with the exception of the amendment proposing to enable the Joint Committtee to obtain lands in certain cases by means of compulsory powers. That amendment was objected to by the Chairman of Committees in the House of Lords, and it was thought advisable, rather than risk the bill, that it should be withdrawn. He was informed that in the event of a dissolution of Parliament the bill, if not passed previous thereto, would be "hung up" till the next Parliament, and would be then proceeded with at the stage at which it had arrived in the present Parliament.

Mr. V. K. Armitage asked whether there was any opposition to the bill in the House of Lords.

The Chairman said he did not know what position they woul in the Lords. He only hoped it would be a satisfactory or wished in receiving the report to express the thanks of the Co to Mr. Hulton, their clerk, for his very arduous labours in cor with it. No one could have been present at the various meeti had had with respect to the bill, and during the discussions i mittee of the House of Commons, without seeing how much th indebted to him for the clauses they had obtained. He did n it was desirable to say more at present. With respect t opponents and to the action which had taken place, they were in regard to which silence was golden. He trusted that a su result would be arrived at before the end of the present Parliam

Mr. Alderman Joseph Thompson desired to congratulate th mittee upon the services which had been rendered in connecti the bill by their chairman. They were most fortunate in ha chairman of that Committee a gentleman who had already serv Government capacity; who knew so thoroughly the ways House of Commons and also, intimately, so many of its member

Mr. Alderman Walmsley endorsed the remarks of Mr. Al Thompson.

The report was adopted.

The Clerk reported that in accordance with a resolution pa the last meeting he had ascertained that the Corporation of Bu acquired 24 acres of land for precipitation works, at a cost of £ and he was informed that plans, with a complete scheme, we mitted about seven months ago to the Local Government Bo approval, but were disallowed, as it was considered that the la not sufficient. The Corporation affirmed that they could get n land adjoining. They had power, however, to buy land for the cepting sewers, and to construct them; plans were ready, an was nothing whatever to prevent that part of the work being out without delay. Pending the result of the Mersey and Irw vention of Pollution Bill, he suggested that the further consider proceedings with regard to the Corporation of Bury should b poned till the next meeting.

Upon the motion of Mr. T. W. Killick the report was adopte

The Clerk read a letter received from the solicitors to th Riding County Council (Messrs. Williams and Deacon, Wa stating, in reply to a letter from the Joint Committee invit operation in the matter of river pollution, that the West Sanitary Committee had already served statutory notices u sanitary authorities through whose districts that part of the rive within the West Riding flowed, of the intention of the Comm take proceedings against them under part 2 of the Rivers P Prevention Act, 1876. That notice was at present current, an no doubt be followed up, unless in the meantime the sanitary au involved gave satisfactory assurances that they would discha statutory obligations in the matter.

The Chairman said the letter was satisfactory as far as it w showed that the West Riding County Council had the matte them. If they required to be stirred up at any future time th mittee would be able to do it. So far as the present was concer thought they must leave the West Riding authorities to deal rivers in their own districts.

A letter was also read by the Clerk from the Clerk to the De County Council, stating that the question of the pollution of th Goyt and Etherow, and other rivers in North Derbyshire, w taken up by the Council, and that various authorities were bei municated with with a view to the abatement of pollut several cases in the county notices had been given under th Pollution Act, 1876. The Committee hoped that ere long ther be a decided improvement throughout the county.

Mr. V. K. Armitage asked whether it would not be well approach the Derbyshire County Council with a view to thei them. He understood from a member of the Derbyshire Council who took an active interest in the subject that the sol of their remaining out was the fear of expense, and that if th convinced that the expense would be small they might be ind join that Committee. The gentleman to whom he referred e the wish that they should not abate the pressure they were ex and he especially mentioned New Mills, where he hoped som steps would be taken by the Joint Committee. They we nothing there to purify the rivers, and would not unless they w pelled.

The Chairman said that, with respect to what had fallen fr Armitage, he thought the time had hardly arrived when they again approach the County Council of Derbyshire. It would b good thing if they could have that Council represented on t Committee, but the next offer should come from the De Council. Mr. Armitage might get his friend to move in the De County Council and the matter might be brought on in that wa

The Clerk stated that he had received some important lett the Foreign Office with respect to the question of river poll France, Germany, Russia, and Belgium, which he proposed

nslated and printed. He thought it would be found that there were e same difficulties to contend with in other countries in preventing ter pollution that were experienced in this country.

The Chairman, in proposing that the letters be printed, said they ould express to the Foreign Office their thanks for the promptitude th which a reply had been received to their request. (Hear, hear.)

Mr. Alderman Thompson said he had an opportunity last summer, connection with the visit of a deputation from the Manchester Corration to the Continent upon the subject of technical education, of ting the Foreign Office, through Sir James Fergusson. The Foreign fice did their utmost to meet their wishes, and he thought they ired to forward the interests of the great industrial centres of the ntry. He considered this was a further illustration of the way in ich affairs were administered in the Foreign Office. He moved that nks be accorded to the Foreign Office.

Mr. T. W. Killick seconded the motion.

Mr. Haslam: Could we not inoculate the Local Government Board h the spirit of the Foreign Office? (Laughter)

The Chairman: That would be a very good thing.

Mr. R. A. Tatton, the Chief Inspector, in his report stated that ing the past month the time of the inspectors had been principally upied with the prevention of cinder-tipping and in getting further rmation as to sewage pollution by local authorities. Some horities which had works in operation had not yet connected the le of their districts with their works, which they would have to do re it could be said that they effectively treated their sewage. He lately written to the local authorities of Aspull, Norden, Ince, and desley calling their attention to the condition of their sewage works informing them that he could not advise the Joint Committee that y were efficiently treating their sewage. At Aspull there were cipitation tanks which did not appear to have been cleaned out for nths, and through which the sewage flowed to be subsequently dealt h by an old pit shaft. If that were a mode of dealing with it which satisfactory (and he certainly did not think it could afterwards se any material pollution of the river), it would be better to omit form of passing it through the tanks, which in their present state, ng full of putrefying matter, must do more harm than good. The rden sewage works consisted of small tanks for arresting the solids, h no arrangements for subsequent land filtration. That was quite fficient to effect a purification of the sewage, and he considered that Board should acquire more land and supplement their tanks by ation or land irrigation. The efficiency of the tanks themselves uld be much improved if a precipitant were used. The Ince sewage rks consisted of tanks and an area of land for irrigation, but the age was considerably worse after treatment than before it, in conuence of the clogged state of the land, which caused it to get into a trefying condition. He was informed by the Clerk to the Local ard that they were in communication with the Hindley Local Board lo dealing with the sewage. That would probably be satisfactory, he Hindley works were quite new. The Tyldesley farm was 130 es in extent, which should be ample for dealing with the sewage of population, which was under 13,000. The effluent at the time of visit was not good, and the condition of the river below the outlet wed that that was not an unusual state of things. The Leigh Local ard had applied to the Local Government Board for powers to row £10,700 for a sewage scheme.

Mr. Haslam asked that the attention of the Committee should be ected to river pollution at Farnworth, and, in accordance with the gestion of the Chairman, moved that the Inspector be requested to ort upon the condition of affairs at Farnworth and Bolton.

The motion was seconded and adopted.

In answer to a question, Mr. Tatton, the Chief Inspector, said that he four authorities he had written to, and to which he had referred his report, he had only received replies from Ince and Aspull.

It was resolved that the question of dealing with these authorities uld be deferred till the next meeting of the Committee.

Mr. Alderman Thompson asked whether anything had been heard n Moss Side. Manchester was going steadily on with its work, but had no information as to what Moss Side was going to do. They rd rumours, but nothing definite, and he considered it was high e that Moss Side should do something practical. (Hear, hear.)

Mr. Alderman Walmsley moved that the Moss Side Local Board be ed with notice. The action of Moss Side, he said, did not admit liscussion for one moment.

The Chairman said Moss Side should be dealt with as they had t with the other places, and that Mr. Tatton should report as to exact state of the case there, so that it might be dealt with at the t meeting.

A resolution to this effect was agreed to.

The Finance Committee presented their estimates for the year ending rch 31, 1893, amounting to £4,300. There was cash in hand ounting to £1,180, leaving the amount to be provided £3,120.

The report was adopted, and the Committee then adjourned.

SOCIETY OF CHEMICAL INDUSTRY.

SCOTTISH SECTION.

THE closing meeting before the recess took place in the Society's Rooms, Glasgow, on Tuesday, June 7th. Mr. E. C. C. Stanford, who presided, opened the proceedings by announcing that subsequent to last meeting, the committee had been called upon to fill up the Hon. Local Secretaryship, on the resignation of Dr. G. G. Henderson, owing to that gentleman having been appointed to the vacant professorship in chemistry in the Glasgow and West of Scotland Technical College. They had chosen Mr. J. Stanley Muir, of the Chemical Department, Glasgow University, and that gentleman he had now the pleasure of presenting to the section as the new Hon. Secretary. Mr. Muir was cordially received, and the very appropriate remarks of the chairman as touching the services of Dr. Henderson during past years, was also warmly endorsed. The minutes of the previous meeting were then read, confirmed and signed, whereupon a paper was read on "Some new methods of estimating chromium in ferrochromium and steel," by Dr. J. Clark, public analyst, Glasgow. This paper was descriptive, and entered at some length into detail. Questions were invited at the close, but no one spoke, and a vote of thanks was passed.

The next subject was "An apparatus for the estimation of dissolved gases in water," by Mr. James Robson, Glasgow. This apparatus, which was simple of construction, was produced on the table, and Mr. Robson's notes were confined to an explanation of its parts and method of working. It was entirely home made he said, and he further explained that he had been led in this direction of research while under the late Professor Dittmar. After a few questions had been put and satisfactorily answered, Mr. J. Cruickshank Smith read a short paper "On maize oil." This proved an interesting novelty, as shown by the conversation which followed and the number of members who took part therein. His remarks were based on the analysis of one sample of this oil which came through his hands while under Professor Mills, Glasgow. The oil has qualities not shared in by other oils. The ease with which it saponifies is a characteristic by which it may the more readily be recognised. It is akin to cottonseed oil, but with marked difference too, and perhaps it is nearest to castor oil of any, except in appearance. It is a good lubricator. In reply to one question Mr. Smith said that he did not know whence the sample in question had been procured; he did not know in what quantities it was procurable, and, as to its uses, it, as already said, was claimed as possessing good lubricating qualities and was easy of saponification. During the conversation one member mentioned £20. a ton as the probable market value. The meeting was brought to a close with a short paper "On oxidized or blown oil," by Messrs. R. T. Thomson and H. Ballantyne, the oils treated being cottonseed, rape and sperm. This did not lead to any discussion, and a vote of thanks concluded the proceedings.

THE SOAPMAKERS' ASSOCIATION.

THIS important trade association has just celebrated the 25th anniversary of its birth. Its formation in 1867 was due to the enterprising suggestion of Mr. Charles T. Cross, of the firm of Messrs. J. B. Rowe & Co., Brentford, who undertook the duties of honorary secretary. At the half-yearly meeting held on Friday, the 10th inst., at the Albion Hotel, Aldersgate-street, London, there was in view of the occasion a large and representative gathering of soapmakers assembled to do honour to the retiring secretary, as well as to his successor in office, Mr. Edward Rider Cook.

The following are some of the more influential firms which were represented at the meeting, in addition to many others who were present:—

Jno. Knight & Sons, London.
C. Thomas Bros., Bristol.
East Lancashire Soap Co, Clayton-le-Willows.
Anderson & Cattley, London.
Wilkie & Soames, London,
T. B. Rowe & Co., Brentford.
J. Crosfield & Sons, Warrington.
W. Gossage & Son, Widnes.
R. Wheen & Sons, Deptford.
Ed. Cook & Co., Bow.
J. & P. Cowan, London.
F. J. Hunt & Co., Stratford.
T. N. Harris & Sons, Stratford.
J. Watson & Sons, Leeds.
Evershed & Co., Brighton.
Tyson, Richmond, & Jones, Liverpool.
Geo. Hearn & Co., London.

Mr. Cross was the recipeint of a valuable testimonial in recognition of his 25 years of earnest work in the interests of the association, and

Mr. Cook was very heartily welcomed by the meeting as a successor under whose guidance the useful development of the association was assured. The re-appointment of Mr. William Dunkan Knight to the office of president was also heartily adopted by the meeting as a further guarantee of solid progress.

The association has during its 25 years of existence done much useful work in safeguarding the interests of the trade, more particularly in regard to river pollution, railway rates, rating of machinery, trade marks, and other matters which have been the subject of official enquiry and legislation.

Such matters have always been prominent in the columns of the *Chemical Trade Journal*, which, circulating very largely amongst soap makers in this country, is naturally one of the best organs for those connected with the industry of soap manufacturing. The association is represented on the London Chamber of Commerce, and following the initiative of that body has been able to furnish on more than one occasion a tribunal equal to the arbitration of trade disputes arising between members of the association.

RECENT CUSTOMS DECISIONS.

COAL-TAR PREPARATIONS—DIMETHYL ANILINE.

IN the matter of the protest of Schulze-Berge & Koechl, against the decision of the collector of customs at New York as to the rate and amount of duties chargeable on certain dimethyl aniline, imported per *Rhynland*, March 6th, 1891, the following is the opinion by General Appraiser Lunt:

We find as facts:

1. That Messrs. Schulz-Berge & Koechl imported into New York, March 6th, 1891, certain merchandise invoiced and known as dimethyl aniline, upon which duty was assessed as a chemical compound, under the provision of paragraph 76, N.T.

2. That said merchandise was dimethyl aniline, a chemical compound and a coal-tar preparation, not a colour or dye, and is known as a coal-tar preparation commercially and in the arts.

The protestants claim that duty should have been assessed at 20 per cent. *ad valorem*, as provided for coal-tar preparations, under paragraph 19 of the Tariff Act of October 1, 1890.

The contention of the importers appears to us to be well founded in fact and law, benzol being the immediate source from which the principal element of the preparation is derived, and, as is well known, benzol is a direct distillate of coal tar.

The merchandise is dutiable at 20 per cent. *ad valorem*, under paragraph 19, N.T. The protest is sustained.

BURNT STARCH.

In the matter of the protests of Chas. Zoller, against the decision of the collector of customs at New York as to the rate and amount of duties chargeable on certain burnt starch, imported per vessels and at dates named in schedule annexed, the following is the opinion by General Appraiser Wilkinson:

The merchandise is invoiced as burnt starch. It was returned by the appraiser as a "colouring for brandy," and was assessed for duty at 50 per cent., under paragraph 22, N.T. It is claimed by the appellant to be dutiable as burnt starch, at 1½ cents per pound, under paragraph 324.

At a somewhat extended hearing of the case, the contention on the part of the collector was that the substance in question is starch burnt to a greater degree than is the ordinary burnt starch or dextrine of commerce, and that it is not burnt starch such as dextrine, gum substitute, or British gum. There was no evidence that the article is or ever was used as a colouring for spirits, wine or beer.

Samples of the importation are small compact pieces, nearer black than brown, gummy in character, burnt almost to caramelization, and showing a readiness to diliquesce. An affidavit of the manufacturer, received since the hearing, says:

"The starch is boiled in the presence of very dilute acid for a sufficient length of time until the whole becomes soluble, after which it is evaporated to dryness, the exposure to heat continued until the necessary temperature is arrived at, care being taken that it does not pass 280° to 300°F., or about 100° below the carbonizing point.

The importer testified that the article is not used as a colouring, but that it is used "simply for flavouring and giving the beer a milder taste, acting similar to glucose, and the dextrinous substance aids in keeping the bead or froth on the beer, and enables it to stand better." There was also evidence to show that the article is new to trade in America.

We find, upon the testimony, that the merchandise in question (1) is not a beer colouring, and (2) that it is burnt starch; and we hold that it is provided for at 1½ cents a pound, under paragraph 324.

The claim of the importer is sustained accordingly.

PETROLEUM OR ROCK OIL (BLACK LUBRICATING OIL).

In the matter of the protest of Geo. W. Black, against the decision of the collector of customs at Port Huron, Mich., as to the rate and amount of duties chargeable on certain so-called "black lubricating oil," imported per *Huron*, December 7th and 10th, 1891, the following is the opinion by General Appraiser Tichenor:—

The merchandise in question was imported from Petrolia, Canada, in barrels, and is described in the invoices and bills of lading either as "engine oil" or as "lubricating oil." It was assessed for duty 25 per cent. *ad valorem*, under paragraph 76, N T., as distilled oil, and is claimed by the appellant to be dutiable at 20per cent. *ad valorem*, as an article manufactured in whole or in part, under section 4, N. T.

It appears from sworn statements furnished by the shipper of the merchandise, that it consists of rock oil, which comes ready formed from the earth, and is stored in iron tanks to which sufficient heat is applied to take off the water, benzine, gasoline and naphtha, after which it is allowed to settle and cool, and is thence pumped directly into the barrels for shipment, and does not pass through a worm, condensor or other pipes; is not mixed or compounded with any foreign ingredients or subjected to any process of distillation whatever, but remains a natural oil.

A sample of the merchandise was submitted to the appraiser of this port for analytical determination, and from his report it appears that the article is crude petroleum, 65 per cent. of which distils between 185° C. and 360° C., equal to 385° and 680° F., and that its specific gravity is 0·0864 at 15·5° C.; that it is not a distilled oil in the sense of being refined, but could and probably would be used for lubricating purposes, and he expresses the opinion that it is dutiable as a raw and unmanufactured article, at 10 per cent. *ad valorem*, under section 4, N.T.

We find as a matter of fact, from the papers and testimony in this case:—

First. That the merchandise in question is petroleum or rock oil, which has been obtained from the earth by pumping or otherwise, and has not been compounded or mixed with any other ingredient.

Second. That it has not undergone a process of distillation, and is not known commercially as a distilled oil.

The protest is accordingly sustained.

THE RELATIVE COST OF GAS AND ELECTRIC LIGHT.

MESSRS. Maunsell Mercier & Co., the well-known electrical and gas engineers of Manchester, have recently made some experiments in order to ascertain the comparative cost of lighting by Wenham gas lamps and incandescent electric lamps. In making this comparison of the costs of lighting by the above systems, they assume that gas is laid on from the mains and supplied at 3s. per 1,000 cubic feet, and that the electric current is generated by the consumer's own dynamo and engine, at a cost of 2½d. per unit; or obtained from a supply company at this price, if the cost per unit is more than 2½d. a corresponding difference must be made in the calculations.

EXAMPLE OF AN INSTALLATION OF 3,000 CANDLE POWER.

They take it that each No. 1 Wenham "Eclipse" lamp gives 100 candle-power for 10 cubic feet of gas per hour when properly regulated (although under favourable circumstances they will give a greater result)—3,000 ÷ 100 = 30, No. 1 Wenham "Eclipse" lamps.

They assume that their incandescent lighting is made up of 16, 32, and 50 candle-power incandescent lamps, as follows:—

20 of 50 candle power	= 20 × 50 =	1,000	candle power.
30 of 32 ,,	= 30 × 32 =	960	,,
65 of 16 ,,	= 65 × 16 =	1,040	,,
Total		3,000	

The current required for incandescent lamps may be taken at 3·5 Watts per candle power. When the lamps are quite new they will take less, but as they get older they require more, so that 3·5 Watts is a very favourable estimate.

3,000 candle power × 3·5 Watts per hour = 10,500 Watts per hour = 10½ Board of Trade electrical units per hour. A Board of Trade electrical unit is 1,000 Watt hours, and is the standard measurement of electrical current, as against the standard gas measurements of 1,000 cubic feet, and they are relatively as the ratios of 10·5 to 1 (allowing 3·5 Watts per candle power). That is, the cost of an electrical unit, multiplied by 10·5 gives the equivalent cost of gas per 1,000 cubic feet.

10·5 Board of Trade units per hour being required, and taking for comparison 1,000 hours' lighting per annum, we shall require per annum 10·5 × 1,000 = 10,500 units of electricity. The lowest estimated cost of producing a Board of Trade unit of electricity is estimated at 1·75d., with the most modern plant, whilst the actual cost from the reports of the undermentioned supply companies is:—

Newcastle and district	2·85
Newcastle-on-Tyne.....	2·72
St. James and Pall Mall Company	2·67
	3 / 8·24
	2·74

t is therefore quite safe to assume that the cost of generating the tric current to small consumers, such as hotels, shops, collieries and ks, will not be less than 2½d. per unit, which is equivalent to gas 2½d. × 10·5) 2s. 2¼d. per 1,000 cubic feet. As the life of an ndescent electric lamp only averages 1,000 hours' burning, we t provide for the cost of renewing the lamps for every 1,000 hours' ting :—

	£	s.	d.	£	s.	d.
amp renewals—						
20 50-c.p. lamps, at 5s. each	5	0	0			
30 32-c p. ,, 4s. ,, ...	6	0	0			
65 16-c.p. ,, 3s. 9d.	12	3	9			
				23	3	9
10,500 Board of Trade units of electricity at 2½d.				109	7	6
Total cost of electric lighting				132	11	3

hirty, No. 1 size, Wenham lamps will consume 30 × 10 = 300 : feet of gas per hour, and for 1,000 hours (per annum)=300,000 : feet, and as the lamps will probably be burning on the bye pass part of the year in addition to the 1,000 hours they are actually e for lighting purposes, we will allow for 100,000 cubic feet of gas ldition to that consumed whilst the lamps are burning. This will e a total consumption of 400,000 cubic feet of gas, and we will w for each lamp being cleaned once a year at 5s. per lamp, and in tion allow 5s. per lamp for new glasses, burners, etc. :—

	£	s.	d.
400,000 cubic feet of gas, at 3s. per 1,000	60	0	0
Lamps, repairs, and cleaning, 30 lamps at 10s. each	15	0	0
Total cost of gas lighting.....	75	0	0

	£	s.	d.
Total cost of electric lighting by incandescent lamps	132	11	3
Total cost of gas lighting by Wenham patent lamps	75	0	0
Saving in favour of gas of	57	11	3

comparison of this nature is of great value to those who have to t mills and large works, and should be of considerable assistance in rmining which light should be used for such purposes.

THE EVAPORATIVE POWER OF COAL.

R. Geo. H. Barrus, of Boston, has written a treatise on boiler tests, embracing the results of 137 evaporative tests made on 71 ers, conducted by the author. In summing up the general con- ns which secure economy in using coal, he shows that the highest lts are produced where the temperature of the escaping gases is least. In other words, the greater the amount of heat which is rbed by the heating surfaces and the water in the boiler before the escapes up the chimney, the greater the economy, which ought to ery obvious, but which is often overlooked. The temperature of scaping gases which will produce the best results, the author con- es, will be about 375° for anthracite and 415° for Cumberland minous) coal.

e relation between the heating surface and the grate area which produce the highest efficiency is also considered. The conclusion at for anthracite coal it should be in the proportion of 36 to 1, and either more or less produces a loss, when the rate of combustion not exceed 12 pounds of fuel per square foot of grate per hour. bituminous coal the ratio should be from 45 or 50 to 1, and the lusion is drawn that a "much larger amount of heating surface is ired for obtaining the full efficiency of bituminous coal than for rs using anthracite coal."

nother interesting conclusion deduced from the experiments is at a certain minimum amount of tube opening is required for ent work." The highest efficiency, he concludes, with anthracite is obtained when the tube opening is from one-ninth to one-tenth e grate surface. For bituminous coal he concludes that the area e tube opening should be from one-sixth to one-seventh of the surface.

A comparison is then made of the economy of different kinds of boilers, which is very interesting; but there is room here to give only the writer's conclusions. The form of horizontal boiler, he says, which with suitable proportions and operation can be depended upon to give the highest evaporation is the common horizontal return tubular boiler so widely used in New England factories.

"The general conclusion," he says, "to be drawn from all these comparisons is that the economy with which different types of boilers operate depends much more upon their proportions and the conditions under which they work than upon their type; and, moreover, that when these proportions are suitably carried out, and when conditions are favourable, the various types of boilers give substantially the same economic result."

A separate section is devoted to a comparison of the value of different kinds of coal, the general results of which are given in the following table :

Name of Coal.	Pounds of water evaporated from and at 212 degrees per pound of dry coal.
Anthracite, broken	9·79
"Cumberland," bituminous	11·04
Anthracite, chestnut	9·40
,, Pea	8·86
Two parts pea and dust and one part Cumberland	9·38
Two parts pea and dust and one part culm	9·01
Nova Scotia culm	8·42

Some tests were also made to determine the value of petroleum as a fuel, the conclusions from which the author sums up as follows: "This means, in round numbers, that the price of oil must be less than one dollar per barrel, delivered at the boiler, in order that the cost of fuel and labour for a 1,000 h. p. plant shall be equal to that which obtains when Cumberland coal is used at 18s. per ton."

SULPHATE OF COPPER AND PRESERVED PEAS.

AT the Liverpool Police Court last week, before Mr. Stewart, the stipendiary magistrate, Sarah Wharton, 11, Leece-street, and William Adair and another, 66, Myrtle-street, grocers, were summoned for selling green peas in 1lb. bottles which had been dealt with for colouring purposes by sulphate of copper to the extent of one grain to the pound, which ingredient was said to be injurious to health. The summonses were taken out at the instance of the Health Committee of the Corporation. The bottlers of the peas, Messrs. Anson Brothers, Selby, took up the defence, and they were represented by Mr. Lawson Walton, Q.C., and Mr. William Waugh. Dr. Hope, the medical officer for Liverpool, said the quantity of sulphate of copper found in the peas was calculated to cause stomachic disturbances, but he would not say it would poison anyone. In cross-examination witness said that after being mixed with the peas it would become an albuminate, and he could not tell how far that was soluble in gastric juice.—Professor Fraser, Professor Dougal, Dr. Thomas Hine, Professor Glaister, Dr. Freshfield, and a number of other medical and chemical authorities were called to prove that the copper albuminate was practically insoluble in gastric juice, and in such proportion as in this case it was harmless. Most of the witnesses had partaken of the peas and allowed their children to do so.—Mr. Stewart said everybody must know that these were not fresh peas, and from the evidence he must dismiss the cases.

THE POLLUTION OF THE TAME.

A SPECIAL meeting of the Tamworth Rural Sanitary Authority was held on Saturday last, Mr. T. Johnson presiding, in order to receive a report from the surveyor (Mr. H. J. Clarson) upon the state of the River Tame within the area of the Authority. The report was to the effect that the polluted condition of the river was practically the same as it was in June, 1890, when the last report was made. There was still the same absence of vegetation on the banks of the stream. An analysis of the water below Alder's Mill, by Mr. A. Bostock Hill, showed that after receiving the refuse from the paper mills and other manufactories, and the whole of the sewage from the borough of Kettlebrook, the water was in a less polluted state when it left the district that when it entered it. This, the report stated, was due to two causes—the dilution of the Tame by the River Anker, which enters at the Castle Mill, and the discharge of chemical refuse from Kettlebrook Paper Mill, which deodorised and precipitated the sewage between the weir on the Fazeley Road and the Castle Mill. The

result was that the whole distance between those points was practically silted up with sewage sludge. The width of the river at the "trunk" is a third less than it was 15 years ago. The river for its whole distance could only be described as "a filthy, stinking sewer."

A summary of the report was directed to be forwarded to the Staffordshire County Council in order to be submitted to the conference at Wednesbury, which was held on Friday, the 17th instant.

Legal Intelligence.

HIGH COURT OF JUSTICE—QUEEN'S BENCH DIVISION.

(Before the Lord Chief Justice and a Special Jury.)

GRIFFITHS AND OTHERS *v.* CURTIS AND HARVEY.

This was an action by the directors and manager of the Schultze Gunpowder Company, to recover damages for libel, contained in a pamphlet called "Notes on Shooting," and issued by the defendants, who are the well-known manufacturers of black gunpowder. The alleged libel had reference to certain photographs issued by the plaintiff company, representing the simultaneous discharge of two guns in a covert, one of which was supposed to be loaded with black powder and the other with a nitro-compound, which representations the defendants complained of as a gross exaggeration and attempt to mislead.

Mr. Blake Odgers (Mr. Lockwood, Q.C., and Mr. J. S. Pritchard with him), for the plaintiffs, said that his Lordship would not be troubled with the case, which had been settled upon the terms that all imputations on both sides should be withdrawn.

Mr. Waggett (Sir Henry James, Q.C., and Mr. Finlay, Q.C., with him), for the defendants, said he agreed to those terms, and it had been agreed that the photographs, so far as it was in the plaintiffs' power to effect it, should be withdrawn and not further issued.

The matter then terminated.

COURT OF APPEAL.

(Before the Master of the Rolls, Lord Justices Bowen and Kay.)

THOMPSON BROS. AND CO. *v.* SHARP, MURRAY AND CO.

On Wednesday last, an appeal was made against the verdict given by the Lord Chief Justice and a special jury, at Liverpool, last March, when a report of this case was given in these columns (No. 255 p. 244).

Mr. Gully, Q.C., appeared for the plaintifts and stated the case for his clients.

Mr. Richards (junior to Mr. Bigham, Q.C., counsel for the respondents), said they would have called the first merchants in Manchester to prove that when they were buying indigo-blue yarns or cloth they were careful to discriminate as to the quality consequent on the difference between goods on which indigo-blue alone was used and these not wholly of indigo-blue. This colour would be covered by prices ranging from about 3d. per pound to 2s 2d. or 2s. 3d. per pound; and between these two extremes they had very strong evidence.

At the conclusion of the arguments the Master of the Rolls said he was of opinion there must be a new trial of the case. He did not say that the Chief Justice misdirected the jury in point of law, but he had a strong opinion that if it did not amount to this there was a miscarriage by the Chief Justice striking too soon and allowing the jury to find their verdict before he had construed the contract. This document was in writing and showed that the goods were to be dyed "indigo-blue." According to the ordinary English language this would mean that he intended indigo-blue only, and pure, unless it could be shown that the expression had in the trade a meaning different from what ordinary persons would apply to it. In this case there was no evidence that the words had any other than their ordinary meaning; on the contrary, the only evidence was that they bore the ordinary meaning—that was, that indigo-blue, and indigo-blue only, was meant. In these circumstances it seemed to him (the Master of the Rolls) the question of the contract was not for the jury at all, but for the judge only, and that the proper construction was that defendants undertook to dye these goods in indigo blue pure and simple. If that were so, evidence might have been given with regard to the breach, and whether or no dyeing it with anything else complied with the contract for "indigo-blue." So far from the Chief Justice allowing the jury to find as they did, if defendants had said "We don't propose to call any witnesses" he should have instructed the jury it was an undefended action, and the only question for them was one of damages. But that was not done. It was defendants' case that, so far from declining to call witnesses, but for the premature action of the Chief Justice they would have called them. There had, then, been a miscarriage, which must be rectified by a new trial being ordered, plaintiffs to have the costs of the appeal, and the costs of the trial to abide the event.

The Lords Justices concurring in these views, it was ordered accordingly.

NOTICE.

LONDON AGENTS.

Booksellers and Newsagents may now obtain supplies of

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From

MR. JOHN HEYWOOD,
2, Amen Corner,
Paternoster Row, E.C.,

On usual trade terms.

Correspondence.

*** *We do not hold ourselves responsible for the opinions expressed by our correspondents.*

ANSWERS TO CORRESPONDENTS.

A. C.—We are pleased to hear your expressions of appreciation.

W. A.—The matter has received our attention.

F. B.—Thanks for your information. We have done as you requested.

H. R.—They shall be sent to you in due course.

J. G.—We trust you will find the pamphlet suited to your purpose.

P. P.—We have received no electros as yet, and are not likely to do until we are in receipt of drawings.

T. T.—Many thanks for proof. We have called attention to the matter.

C. J. C.—Your letter to hand, for which we thank you. We are always glad to receive such communications, and hope we shall continue to do so in the future.

J. H. G.—Your correction was right, obviously so.

PURIFYING CARBON DISULPHIDE.

To the Editor of the Chemical Trade Journal.

Sir,—A process for the purification of carbon disulphide by the action of bromine, followed by that of potash-lye, recently appeared in the *Chemical Trade Journal*. Having tried it, and not finding it answer, I write to enquire if any of my fellow-readers have done so, and obtained satisfactory results.

Yours &c.,
Hy. Brewset.

SEWAGE TREATMENT.

To the Editor of the Chemical Trade Journal.

Dear Sir,—I have read with interest the leaders in your last two issues on the Wolverhampton prosecutions but am inclined to think there are important facts connected therewith, of which you cannot be cognizant.

As stated, "It is but poor encouragement to manufacturers to endeavour to improve the status of such matters when their endeavours are met with cold water, their success ignored, and their failings, though constituting a minority, made the ground for prosecution." But the worst cases are not galvanisers at all (and if memory serves correctly, the firm you mention, Mr. A. Crosbie does no galvanizing), but firms who treat galvaniser's pickle as a special undertaking.

Now if galvanisers relieve themselves of all responsibility by passing on pickle to syndicates, with plant or processes inadequate for its treatment, at a price per thousand gallons, then the last state is worse than the first, as far as the corporation is concerned.

The remarks *re* acid requisite for neutralising the initial alkalinity of raw sewage would be more applicable if manufacturers could be persuaded to inject the pickle uniformly, which, however they do not, and, in fact, cannot, without large and expensive storage reservoirs of special construction, altogether impracticable.

Further, the amount of free acid which is naturally reduced to a minimum, is not objected to so much as the combined, or iron sulphate.

It is a common thing for Wolverhampton sewage to contain 50 to 80 grains per gallon of iron (as Fe) in solution. I have found it 200, I heard of it being more.

With a daily flow of 2,000,000 gallons, the cost of lime to bring down this amount of iron can easily be calculated, to say nothing of increased and valueless sludge.

A mixture if 600 samples of sludge was certified by the County Analyst to contain Fe 1·14 %, Fe_2O_3 4·34%. Its value as a manure is therefore practically nil, farmers refusing to have it *carted on their lands gratis*.

0,000 tons are lying now encumbering the ground, the product of years only, and the present sewage rate is 1s. 3d. in the pound. ely the future is a serious consideration. Thanking you in anti-tion,

I am, sir, yours, &c.,

W. NAYLOR.

Trade Notes.

ALKALI WORKS, ETC., AMENDMENT BILL.—This Bill came on pectedly in the House of Commons on Friday last week, and passed econd reading in spite of some opposition from one or two private bers. The House was a meagre one, and the supporters of the rnment were in such strong force that it was considered useless to e on the question. The Bill was then committed for its third ing in committee of the House.

SOCIETY OF CHEMICAL INDUSTRY.—The detailed programme for Annual Meeting this year will be issued shortly. We have already the provisional programme (*C. T. J.* 262, p. 360), and the wing are one or two further items of information which may be of est to our readers. The general meeting will be held, and the dent's address delivered in the Hall of the Drapers' Company, gmorton-street, City, at 3-0 p.m., on Wednesday, July 20th. The tion on the same day being held at 8-0 p.m. at the galleries of the l Institute of Painters in Water Colours, Piccadilly, W. On sday, 21st July, the *Mermaid* will start at 9-30 a.m. sharp from Charing Cross Pier for the visit to various works, *via* the Temple, kfriars, and old Swan Piers. Members are requested to apply for ets and coupons as early as possible.

OVERPOWERED BY CO_2.—Two men engaged in cleaning a brewing at Newport, Monmouthshire, on Monday last, were overcome by the on dioxide which was present, and one of them was suffocated.

TREATING COBALT ORES.—Cobalt is now obtained from low-grade by a new process much cheaper than present methods. The ore asted with common salt and manganese, and then treated with huretted hydrogen to remove the copper, while the cobalt is pre-tated with sulphide of sodium.

FATAL EXPLOSION OF BENZOLINE.—A serious fire took place ntly in a grocer's shop in Pavia, Italy, owing to the explosion of a of benzoline which was stored on the premises. During the fire a collapsed and killed four persons. There is nothing said by way explanation to show how or why the cask exploded.

EXTENSIVE FIRES.—Fire has been rife in Liverpool this week, ing sad havoc in various warehouses. A fire originating in one on warehouse caused the destruction of two others. Before these e were successfully checked, two more warehouses in Blackstone-et were found to be on fire. The two latter were stored with soap drysalteries chiefly, and the fire took its own course despite the ts of the firemen. The total cost of the damage done is said e safely computed at £150,000., if not more.

BUTTER PRODUCING EXTRAORDINARY.—An amusing incident rred in Staffordshire last week. Three cows belonging to a certain er have produced among them, it is stated, some 50 lbs. of er per week. Unfortunately for the owner, some sceptical indi-al took upon himself to have the butter analysed, when it was found these strange cows gave milk which made a butter containing a e percentage of margarine. This peculiar phenomenon, however, the farmer thus blessed with margarine producing cows £38, h was the sum total of his penalty.

THE DIAMOND-BACK MOTH.—An attack has been made on the s in Northumberland by this pest. It is not yet ascertained if the h in this instance has sprung from the tailings of the attack expe-ced last year, or whether it has been carried here afresh by the nt winds. In any case farmers should take time by the forelock endeavour to exterminate this pest, for which purpose Miss E. A. erod recommends the use of a dressing of sodium nitrate, which s up the growth of the infested plants. The use of salt and soot so advocated, though salt alone is pronounced valueless.

Market Reports.

REPORT ON MANURE MATERIAL.

uring the past fortnight there has been very little doing on spot, er in phosphatic or nitrogenous material, but prices have, on the le, been well maintained, and in some instances a slight advance been scored. For 75/80 % Florida phosphate 9d. per unit, c.i.f. to t, in cargoes is probably nearest closing value, though we have not heard of this having being paid, and sales have recently been made at less money. Hot-air-dried Peace River Rock continues to sell at 7½d. per unit, and 7¼d. would, no doubt, buy hot-air-dried South Carolina River Rock for shipment. A moderate business is being done in Continental phosphates of a lower grade at easy prices. There is a great deal of enquiry for cargoes of River Plate bones, afloat or for shipment, and there are large buyers at £4. 2s. 6d., and perhaps something more, but this is much below shippers' idea of value, and, meantime, they decline to offer. For shipment £4. 5s., asked for crushed Kurrachee bones, and this price would probably be business for "fair average quality" Bombay bone meal, Summer and Autumn shipment. On spot £4. 2s. 6d. would be taken for inferior quality Bombay bone meat; £4. 10s. lowest for fine quality. A mixed parcel of Cadiz bones, arrived at Liverpool, sold at £4. to £4. 2s. 6d. per ton, ex quay. Nitrate of soda is rather firmer; 8s. now required for ordinary quality, and 8s. 3d. for refined, on spot. Due cargoes are worth 7s. 10½d. per cwt., and April and June shipments 8s. to 8s. 1½d. per cwt. Nothing special to report in other articles.

TAR AND AMMONIA PRODUCTS.

The demand for benzol seems to have again ceased. Business in 90's has been effected at 1s. 8d for early delivery, but forward contracts could not be made at anything like this price. The price of 50-90's is nominally 1s. 4d. to 1s. 4½d. Anthracene is reported lower; sales of 30% A are reported at 10½d. and even at 10d., and such prices having been established for leading makes, the value of 30% B cannot be called more than 7½d. These low prices should soon attract the attention of buyers. There is no movement in the sulphate of ammonia market; but it is satisfactory to find that prices remain at all events stationary. It is apparent that while the production is small, the manœuvres of the speculators have no great effect on the market, hence the predictions from all quarters of the lower range are not likely to be fulfilled. Beckton price is £10. for July to August delivery, while outside London makes may be fairly stated at £9. 17s. 6d. At Hull £9. 15s. remains the price, but Leith and Liverpool may be quoted at £9. 17s. 6d.

MISCELLANEOUS CHEMICAL MARKET.

The position of the market for Alkalies has undergone little alteration during the past fortnight, and prices all round are steady. Bleaching powder is firm and in good demand at £7. 10s. f.o.r. Lancashire and Tyne. The quotations for caustic sodas are without change, viz., 74%, £11. 5s.; 70%, £10. 5s.: 60%, £9. 2s. 6d., in 10 ton lots f.o.b. Liverpool; and 77%, £11. 15s. per ton f.o.b Tyne. Soda ash, in all qualities, is in steady demand, and prices run within 1$\frac{5}{16}$ and 1⅜ per degree f.o.b. for all ordinary qualities of Solvay and Leblanc soda ash. Soda crystals are unaltered. Chlorate of potash remains at 6¾d. per lb., and soda at 8d., the latter being still in short supply. Vitriol and muriatic acids without change in value. Recovered sulphur nominally £5. per ton, but only in small demand at present. Acetates of lime brown and grey are said to be slightly firmer, but only few actual transactions are recorded, all other acetates and acetic acid remain somewhat depressed. Potash, caustic, and carbonate, are in fair request, and values are steadily maintained. Chemicals generally are quiet.

THE METAL MARKETS.

LONDON, WEDNESDAY.—Pig iron quiet; Scotch warrants closed at 41s. 1d. cash. Middlesbrough, 40s. 6d. cash, and Hematite 49s. 11d. cash. Copper steady: Chili bars, G.O.B.'s and G.M.B.'s closed at £46. 5s. cash, and £46. 13s. 9d. to £47. 1s. 3d. three months. Tin dearer: Straits closed at £103. to £103. 10s. cash, and £102. 10s. to £103. three months. Australian, £103. cash. English ingots, £105. Lead easy: Spanish, £10. 15s.; English, £10. 17s. 6d. to £11. Silesian spelter, ordinary, £22. 5s. Quicksilver, £7. 3s. 6d. first hands; £7. 1s. second hands. Copper shares quiet: Cape, 1$\frac{3}{16}$ to 1$\frac{1}{4}$; Copiapo, 2$\frac{5}{16}$ to 2$\frac{7}{16}$; Libiola, 2⅞ to 3; Mason and Barry, 4⅛ to 4¼; Rio Tinto, 17⅛ to 17¼; Tharsis, 4⅞ to 5; Panulcillo, ⅜ to ½.

GLASGOW, WEDNESDAY.—Market easier, with small business. Scotch done at 41s. 2½d. and 41s. 1½d. cash, also at 41s. 3d. one month; closing with buyers at 41s. 1d. cash, sellers ask ½d. more. Middlesbrough done at 40s. 7½d. cash, also at 40s. 5d. one month, closing with buyers at 40s. 6d. cash; sellers ask 40s. 7½d. Hematite done at 50s. cash, closing with buyers at 49s. 11d., sellers ask 50s.

WOLVERHAMPTON, WEDNESDAY.—The impending dissolution and the approaching end of the quarter combine to limit business, but there is a growing feeling of confidence now that the Durham strike is settled. Prices are without material alteration on the week. Quotations to-day were: Marked bars, £8.; second class sorts, £7.; common, £5. 12s. 6d.; galvanized corrugated sheets, £11. 10s.; plain doubles, £7. 5s.; cinder pigs, 36s. 6d.; all-mine hot blast, 62s. 6d.; Derbyshires, 43s.

LIVERPOOL OIL AND COLOUR MARKET.

OILS.—Palm oil: The tone of the market is steady, though quiet. Sales of Lagos have been made at £20. 15s.; Accra, £19. 17s. 6d., both transit. In olive there has been more business doing, and it is now firmly held at £32. 10s. to £38. per tun. Sales of Syrian have been made at £32. 10s. Linseed is steadily held for 19s. 6d. to 20s. per cwt. in export casks, at which price there has been a very fair demand. Cottonseed has improved somewhat for American grades, Liverpool refined being quoted still at 19s. 6d., but American has advanced to 20s. per cwt. Castor oil shows signs of hardening, good seconds Calcutta now being quoted 2½d. per lb., at which price sales have been made, while first pressure French is quoted 2$\frac{11}{16}$d. Tallow is very quiet, prices tending in buyers' favour. North American being quoted 24s. to 25s. 6d., South American, 26s. 6d., to 27s. Resin, common, is quiet at 4s. 1½d., and other grades firm. Spirits of turpentine have a tendency to decline, to-day's price being 23s. 9d. per cwt. There is a fair business passing however. American and Russian petroleum remain unaltered.

COLOURS.—Prices continue unchanged. Ochres: Oxfordshire, common, £10., medium, £12., best, £15.; Derbyshire, common, 40s., medium, 50s., best, 60s. Welsh, best, 70s., seconds, 50s., and common, 18s.; Irish, Devonshire, 40s. to 45s.; French, J.C., 55s. to 60s.; M.C., 65s. to 67s. 6d. Umber: Turkish quiet. Devonshire, 50s. to 55s. White lead, red lead, and oxide of zinc unchanged. Venetian red, £6. 10s. to £10. Cobalt: Prepared oxide, 10s. 6d.; black, 9s. 9d.; blue, 6s. 6d. Zaffres: No. 1, 3s. 6d.; No. 2, 2s. 6d. Oxide of iron: common, £6.; medium, £10.; finest, £20.

TYNE CHEMICAL REPORT.

TUESDAY.

Chemicals continue steady. Strong demand for bleaching powder and soda ash. The St. Bede Works of the United Alkali Co. have re-started work after being closed for some weeks owing to the coal strike. Bleaching powder, softs, £7. 11s. 3d. and £7. 12s. 6d. per ton, hards, £7. 17s. 6d. per ton; caustic soda, 77/76%, £11. 15s. per ton, 70%, £10. 5s. per ton; recovered sulphur, 2 cwt. bags, £5. 5s. per ton; soda ash, 48%, £5. 8s. 9d. per ton, 52%, £5. 17s. 9d. per ton, 56%, £6. 6s. 9d. per ton; alkali, 36%, £4. 18s. 6d. per ton; white alkali, 48%, £6. 10s. per ton, 50% £6. 15s. 6d. per ton, 52%, £7. per ton; hyposulphite of soda, in 5-7 cwt. casks, £7. per ton, in 10 ton lots, ditto in 1 cwt. kegs, £7. 15s. per ton, in 10 ton lots; silicate of soda, 75° Tw. £3. per ton, 100° Tw. £4. per ton, 140° Tw. £4. 7s. 6d. per ton; soda crystals, in casks, £2. 17s. 6d. per ton gross weight, in 2 cwt. bags, £2. 17s. 6d. per ton nett weight; chlorate of potash, 7d. per lb. less 6%; pearl hardening, £3. 10s. per ton nett; pure white sulphate of alumina, £4. 10s. per ton; blanc fixe, £7. 10s. per ton; chloride of barium, £7. 10s. per ton; nitrate of baryta crystals, £19. per ton; nitrate of baryta, ground, £19. 10s. per ton; sulphide of barium, £7. per ton; carbonate of alumina, £28. 10s. per ton; aluminate of soda, £33. 10s. per ton; hydrate of barium, £11. per ton.

South Durham salt steady at 10s. 6d. per ton f.o.b. Tees.

Coals: The effect of the resumption of work is now becoming evident, and prices are on the whole easier. Bunker coal, 8s. 6d. and 9s. per ton; gas coal, about 9s.; steam coal lower, at 10s. 6d. per ton.

THE LIVERPOOL MINERAL MARKET.

Minerals, generally, have been in fairly good demand, and prices are firm. Manganese: Arrivals practically nil, whilst stocks are very much reduced, and prices remain steady at last quotations. Borate at 6¼d. per lb.; sulphate, £21. 10s.; oxalate, 1s. 6d. per lb.; chloride, £15.; carbonate, £12. 10s., steady. Magnesite: With the present large stocks and further arrivals raw lump is flat. Raw ground £6. 10s., and calcined £12. 10s. Bauxite (Irish Hill brand) continues in brisk demand at full figures; lump 20s., seconds 16s., and thirds 12s. French chalk: Arrivals this week are small. Notwithstanding the holidays a fair amount of business has been and prices are unchanged. "Angel White" brand and "Sil 90s. to 92s. 6d.; prime quality, 90s. to 95s.; and superfine, Barytes: Carbonate still scarce, especially best lump, at 95s.; nuts, 70s. to 80s.; whilst finest white sulphate is "Angel White," No. 1, 70s.; No. 2, 60s. to 65s.; 45s. Pumice stone steady. Iron ore steady; Bilbao shi unaltered; Irish and Cumberland easier. Santander and ganiferous, there is more doing. Emerystone: The market is with common qualities, but best brands are in good demand. lump, £5. 10s. to £6.; smalls, £5. to £5. 10s. Fullers' quiet; best lump, 55s.; fine impalpable ground, £7.; "Em ground, 80s. Scheelite, wolfram, tungstate of soda, and tu metal continue firm and unaltered. Chrome ore firmer, especial higher grades. Antimony ore and metal rather flat; prices Asbestos very firm. Potters' lead ore, smalls, £10. 10s. to £1 Calamine quiet. Strontia sulphate (celestine) quiet. Limespar is especially for English manufactured; old G.G.B. brand in dem 50s. (ground). Felspar quiet. Fluorspar: Best quality Ferro-manganese steady, 75%, £12.; 85%, £13. 15s. Plu brisk. Spanish, £5.; best Ceylon lump at last quotations; Italia Bohemian, £4. to £12. per ton. "Founders," £5. to £6.; Black "Mineraline," £10. French sand, 20s. to 22s. 6d. Ground £45. to £50. China clay steady; common, 18s. 6d.; good m 22s. 6d. to 25s; best, 30s. to 35s. (at Runcorn). Bog ore (oxi iron) steady; finest quality 22s. to 23s.

WEST OF SCOTLAND CHEMICALS.

GLASGOW, TUESD

The feeling in the paraffin section of this market is still furth pressed, and the outlook as disheartening as can be for the ducers. Passing business is of the thinnest kind, and stocks in m hands accumulate more and more. Quotations for lubricating nominally hold to the figures given below, and the best brands continue to command them, but less favoured sorts, and parcels in middle hands, are obtainable at a shade less. Paraffin scale is stil cotted by consumers, and the makers last week had anxious conf as to the further steps to be taken so as to bring the dead-lock to a There is to be another meeting this week at which a decision w arrived at.

Sulphate of ammonia continues on the down grade, and it cer has been done for prompt as low as £9. 13s. 9d., while the very probability is that £9. 12s. 6d. has been taken. For forward, the end of the year, £9. 17s. 6d. to £10. can be done.

Quietness prevails in the general chemicals. No changes exce drop in caustic sodas and a slight recovery in nitrate of so noticeable.

Chief prices current are:—Soda crystals, £2. 17s. 6d., nett alum in lump, £5. 10s., nett Glasgow; soda ash, 1$\frac{3}{8}$d., less Tyne; caustic soda, white, 74°, £11. 5s., 70/72°, £10. 5s., 6 £9. 2s. 6d., and cream, 60/62°, £8. 17s. 6d., all nett Live refined alkali, 1$\frac{5}{8}$d., less 2½% Tyne; bleaching powder, £ to £7. 12s. 6d. nett Tyne; saltcake, 36s. 6d.; borax, refined, £29., and boracic acid, £37. 10s., nett Glasgow; bichr of potash, 4½d. nett, for Scotch and English deliveries (for 4¼d. nett f.o.b. Glasgow); bichromate of soda, 3¾d., nett, for and English deliveries (for export 3½d. nett f.o.b. Gla chlorate of potash, 6¾d., less 5% any port; nitrate of 8s. 1½d.; sulphate of ammonia, £9. 12s. 6d. to £9. 15s. Leith; salammoniac, first and second white, £35. and £33., less any port; sulphate of copper, £15. 10s., less 5% Liverpool; p scale (hard), 2$\frac{15}{16}$d., and soft 2$\frac{7}{8}$d. to 3d. per lb.; paraffi 120°, semi-refined, 3$\frac{5}{8}$d. to 4d.; paraffin spirit (naphtha), gallon; paraffin oil (burning) 5d., 5¼d. and 5½d. according t at works, for Scotch buyers (English and Irish sales about 1d. l ditto (lubricating), 865°, £3. 10s. to £4., 885°, £3. 5s. to £ 890/895°, £6. to £8. Week's imports of raw sugar at G were 10,871 bags.

New Companies.

LENNARD'S PETROLEUM CARRYING CO., LIMITED.—This company was r on the 26th ult., with a capital of £100,000., in £25. shares (of which founders'), to purchase or otherwise acquire the tank oil-carrying steamer of the port of Middlesbrough, the *Henri Reith*, now building, and th tank-barge *Jenny Reith*, and to carry on the business of shipowners, carr tractors, and of refiners, manufacturers, and dealers in oil and other su The subscribers are:—

	Shares.
J. M. Lennard, Middlesbrough, shipowner	1
A. H. Whipham, Middlesbrough, civil engineer	1
R. Jaeger, Middlesbrough, iron merchant	1
W. Middlemass, Middlesbrough, iron merchant	1
W. Lennard, Middlesbrough, ship owner	1
J. A. Finzi, 23, Gt. St. Helen's, E.C., shipbroker	1
A. Lennard, 3, Crown Office Row, Temple, E.C.	1

JOHNSON BROTHERS, LIMITED.—This company was registered on the 3rd inst., with a capital of £45,000., in £10. shares, to acquire, take over as a going concern, and carry on the business of an oil boiler, oil refiner, paint, colour, and varnish manufacturer and general merchant, carried on by H. A. Johnson, at the Cleveland Works, Air-street, Sculcoates, Hull, under the style of "Johnson Brothers," and with a view thereto to enter into an agreement with Mr. H. A. Johnson. The subscribers are :—

	Shares.
H. A. Johnson, Willersley House, The Park, Hull	1
Mrs. H. A. Johnson, Willersley House, The Park, Hull	1
G. A. Edden, 61, Park-road, Hull	1
G. Chadwick, 2, Elm-villas, The Park, Hull	1
W. S. Mellon, Church Farm, Hessle	1
F. E. Thelwell, 1, Windsor-street, Hull	1
S. Leeming, 45, Plane-street, Hull	1

MASON AND BARRY, LIMITED.—This company was registered on the 2nd inst., with a capital of £1,050,000., in £5. shares, to acquire and take over the undertaking of Mason and Barry, Limited, incorporated in 1878, and all or any of the assets and liabilities of that company, and with a view thereto to enter into the agreement referred to in clause 3 of the articles (with the old company and its liquidator), and to carry on and continue the business of working and developing the mines and mining rights acquired by the company. The subscribers are :—

	Shares.
J. Mason, 87, Cannon-street, E. C., merchant	1
F. T. Barry, M.P., 87, Cannon-street, E.C., merchant	1
Captain T. B. Heathorn, R.A., 10, Willow-place, Knightsbridge	1
Miss H. Barry, Woodside Lodge, Forest Hill, S.E.	1
J. G. Barry, 87, Cannon-street, E.C., accountant	1
D. H. Barry, 23, Palace Gate, W., merchant	1
R. T. T. James, 91, Downs-road, Clapton, clerk	1
T. F. Barry, 87, Cannon-street, E.C., merchant	1

NORTH-EASTERN PAPER MILLS CO., LIMITED.—This company was registered on the 4th inst., with a capital of £70,000., in £1. shares, to purchase and acquire the works, property, business, plant, etc., of the Marsden Chemical Co., Limited, and to manufacture, sell, and deal in paper, paper pulp, or any substance, chemical or otherwise, used in the manufacture of paper. The subscribers are:—

	Shares.
Lt.-Col. F. F. Sheppee, Birtley House, Chester-le-Street	1
J. Tennant, Saltwell, Gateshead	1
F. J. Tennant, Hyndford House, North Berwick, N.B.	1
R. N. Redmayne, Woodside, Gateshead, merchant	1
J. M. Redmayne, Harewood, Gateshead	1
J. C. Spencer, Walbottle Hall, near Newcastle	1
L. Wood, Chester-le-Street, colliery owner	1

ROCHESTER CHALK CO., LIMITED.—This company was registered on the 2nd inst., with a capital of £10,000., in £1. shares, to carry on the business of chalk workers, cement manufacturers, lime burners, quarry owners and merchants. The subscribers are :—

	Shares.
W. Tingey, sen., Sunnyside, Gravesend, cement manufacturer	40
W. Tingey, jun., Castle Moat, Rochester, cement manufacturer	300
G. Burge, Northwood, Herne, Kent, cement manufacturer	300
W. H. Tingey, jun., White House, Rochester, cement manufacturer	250
Mrs. W. Tingey, jun., Castle Moat, Rochester	10
Miss M. C. Burge, Northwood, Herne, Kent	90
J. C. Tuffill, 172, High-street, Rochester, wine merchant	10

The Patent List.

This list is compiled from Official sources in the Manchester Technical Laboratory, under the immediate supervision of George E. Davis and Alfred R. Davis, who report professionally upon the value of Chemical Patents.

APPLICATIONS FOR LETTERS PATENT.

Producing Chlorine and Commercially Pure Lead and Recovery of Silver. F. M. Lyte. 10,225. May 30.
Rustless Metallic Alloy. G. C. Taylor and P. Hulme. 10,261. May 30.
Manufacture of Per Salts of Iron. E. Hermite and A. Dubosc. 10,281. May 30.
Bottles for Holding Ethylic Chloride. J. Bengue. 10,293. May 30.
Evaporating Apparatus. F. W. Scott, E. G. Scott, and F. W. Scott, Jnr. 10,298. May 30.
Charging Beer with Carbonic Acid Gas. B. J. B. Mills. 10,305. May 31.
Improvements in Sewage Precipitating Tanks. H. Lockwood. 10,308. May 31.
Non-metallic Bearing. W. T. Carroll. 10,314. May 31.
Manufacture of Sulphate of Iron and Sulphate of Copper. C. Negrier. 10,326. May 31.
Improvements in Galvanising Machinery. H. J. Walduck. 10,354. May 31.
Separating Ground Cement Clinker. W. Joy. 10,355. May 31.
Anti-friction Bearings. H. H. Lake. 10,372. May 31.
Improved Fulling and Bleaching Chemical Preparation. H. H. Lake. 10,381. May 31.
Secondary Batteries. E. Freund and L. Bristol. 10,388. May 31.
Production of Zinc from Blende. C. T. J. Vautin. 10,390. May 31.
Preventing and Removing Boiler Incrustation. G. P. Gardner. 10,401. June 1.
Improved Manufacture of Detergent. A. C. Irwin. 10,438. June 1.
Superheating Steam. D. Halpin. 10,439. June 1.
Obtaining Neutral Sulphate of Soda and Sulphuric Acid from Bisulphate of Soda. E. J. Barbier. 10,450. June 1.
Coating Iron and Lead, etc. F. G. Bates and W. R. Renshaw. 10,459. June 1.
New Basic Colouring Matters of the Auramine Class. J. Y. Johnson. 10,465. June 1.
Manufacture of Illuminating Gas. H. Williams. 10,486. June 2.
Improved Alloy of Aluminium. W. A. Briggs. 10,497. June 2.
Disinfecting Cess-pits, etc. J. Arnold. 10,498. June 2.
Purifying Bleaching Liquor. E. Hermite, E. James Paterson, and C. F. Cooper. 10,517. June 2.
Freeing Copper from Arsenic. F. B. Stone. 10,528. June 2.
Purifying and Disinfecting Air. J. J. Hartnett. 10,539. June 2.
Sewer Gas Destructor. J. E. Palmer. 10,578. June 3.
Treating Iron and Basic Slag and Extracting Silicon and Phosphorus. W. P. Thompson. 10,583. June 3.
Concentrating Alkaline and Other Solutions. A. Chapman. 10,595. June 3.
Producing Pure Carbonic Acid Gas. E. Luhmann. 10,599. June 3.
Cleansing Wool and Hair, etc., and Recovering the Bye Products. C. A. Sahlstrom, and E. Parr. 10,612. June 3.
Improved Ammonium Nitrate Motor. T. C. Hersey. 10,639. June 4.

Gazette Notices.

PARTNERSHIPS DISSOLVED.

LORD BELPER, HON. F. STRUTT, AND JOHN HUNTER, under the style of W. G. and J. Strutt, Belper and Milford, cotton manufacturers, bleachers, and dyers; as far as regards Lord Belper and the Hon. F. Strutt.

MORRIS AND COOKSON, Stockwith-on-Trent, near Gainsborough, sulphate of copper manufacturers.

IMPORTS OF CHEMICAL PRODUCTS

AT

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Period ending June 4th.

Acetate of Lime—			
U. S.	473 pkgs.	Johnson & Hooper	
Acetic Acid and Acetone—			
Holland,	194 pkgs.	A. & M. Zimmermann	
Acetone—			
Holland,	1 pkg.	T. Palmer	
,,	8 pkgs.	A. & M. Zimmermann	
Alkali—			
France,	110 c.	Arnati & Harrison	
Alum—			
Holland.	14 pkgs.	Ohlenschlager Bros.	
,,	108	Phillipps & Graves	
Germany,	20	H. Lambert	
Ammonia—			
Belgium,	53 pkgs.	T. H. Lee	
,,	28		
Ammonium Chloride—			
Holland,	41 pkgs.	H. Johnson & Sons	
Antimony—			
France,	110 t.	Novelli & Co.	
Spain,	9	J. Knill & Co.	
,,	10	L. & I. D. Jt. Co.	
Australia,	1	,,	
E. Turkey,	30	J. Bamber	
N. Russia,	1	Tegner, Price & Co.	
E. I.	32	Pillow, Jones & Co.	
Portugal,	63	J. Bamber	
Smyrna,	50	French & Smith	
Asbestos—			
Germany,	£25	Phillipps & Graves	
Holland,	25	,,	
Italy,	8	Capt. Balmameo	
,,	40	Italo-Brit S. N. Co.	
Germany,	50	A. Thumann & Co.	
Barytes—			
Holland,	115 cks.	Magee, Taylor & Co.	
Germany,	20	T. F. Creed	
Belgium,	20	P. Jantzen	
Germany,	111	W. Harrison & Co.	
,,	48	O'Hara & Hoar	
Belgium,	200 bgs.	Leach & Co.	
,,	20 cks.	W. Harrison & Co.	
Holland,	192 bgs.	G. Rahn & Co.	
Germany,	19 cks.	J. Matton & Co.	
Boracic Acid—			
Germany,	1 pkg.	L. & I. D. Jt. Co.	
Borax—			
France,	4 pkgs.	Page, Son & Co.	
Caoutchouc—			
France,	6 c.	Flageollet & Co.	
Penang,	52	L. & I. D. Jt. Co.	
Rangoon,	974	,,	
Penang,	38	Prop. Bull Wf.	
,,	17	T. Merry & Son	
Singapore,	115	L. & I. D. Jt. Co.	
France,	10	Mory & Co.	
U. S.,	187	Lewis and Peat	
,,	47	Williams, Torrey & Co., Ltd.	

Zanzibar, 62 L. & I. D. Jt. Co.
" 2 Kleinwort, Sons & Co.
E. I. 64 L. & I. D. Jt. Co.
" 24 Ross & Deering
" 141 Ralli Bros.
Singapore, 94 Williams, Torrey & Co., Ltd.
Aden, 49 Clarke & Smith
E. I., 3 Lewis & Peat
" 54 E. Barber & Co.

Carbolic Acid—
Holland, 24 pkgs. Carey & Sons
" 15 J. Owen

Caustic Potash—
France, 21 drs. Beresford & Co.
" 300 c. Spies Bros. & Co.

Chemicals *(otherwise undescribed)*
Holland, £10 T. Palmer
" 37 Phillipps & Graves
Germany, 20 W. Burton & Sons
Holland, 81 pkgs. A. & M. Zimmermann
Germany, 60 T. H. Lee
" 1 W. J. Crook
" 47 A. & M. Zimmermann
" 26 Phillipps & Graves
" 10 W. Burton & Sons
Belgium, £11 Leach & Co.

Citrate of Lime—
Italy, 12 pkgs. Thames S. T. & L. Co., Ltd.

Cream of Tartar—
Holland, 24 B. & F. Wf. Co., Ltd.
France, 17 W. C. Bacon & Co.
" 12 Smith, Abbot &-Co.
" 5 B. & N. Wf. Co., Ltd.
Spain, 8 W. C. Bacon & Co.
" 6 B. & F. Wf. Co., Ltd.
France, 11 "
Italy, 23 Howards & Son
Holland, 134 Middleton & Co.
Italy, 6 Italo-Brit S. N. Co.
" 8 Thames S. T. & L.
France, 9 E. W. Carling & Co.

Dolomite—
Germany, 49 t. J. B. Orr & Co.

Dyestuffs—
Aniline
Holland, 11 pkgs. Phillipps & Graves
" 10 J. Forsey

Anthracene
France, 5 pkgs. Hernu, Peron & Co,

Argols
Cape Town, 5 pkgs. Brown & Elmslie
Italy, 2,356 B. Jacob & Sons
" 60 Thames S. T. & S. Co., Ltd.

Cochineal
Canaries, 18 pkgs. Swanston & Co.
" 7 Kuhner, Henderson & Co.

Cutch
Rangoon, 500 pkgs. Phillipps & Graves
" 550 A. Howden & Co.
" 1,000 Lewis, Lazarus & Sons
" 763 H. A. Litchfield & Co.
" 500 Kleinwort, Sons & Co.
Germany, 20 H A. Litchfield & Co.
Singapore, 467 L. & I. D. Jt. Co.
E. I., 500 Ross & Deering

Divi Divi
E. I., 297 pkgs. Beresford & Co.
" 97 R. & J. Henderson

Extracts
Belgium, 100 pkgs. L. J. Levinstein & Sons
France, 126 30 drs. Carey & Sons
" 50 Prop. Chmbln's Wf.
Belgium, 25 Leach & Co.
Canada, 120 A. J. Humphrey
U.S., 10 Beresford & Co.

Gambier
E. Indies, 219 pkgs. L. & I. D. Jt. Co.
Singapore, 452 R. & J. Hewetson
" 443 S. Barrow & Bro., Ld.
" 210 Elkan & Co.

Indigo
Germany, 39 pkgs. Craven & Co.
Holland, 10 brls. R. Baelz & Co.
S. W. I., 12 rns. 27 pkgs. L. & I. D. Jt. Co.
E. Indies, 183 shts Elkan & Co.
" 23 Schenker & Co.
" 91 Phillipps & Graves
" 15 chts L. & I. D. Jt. Co.
" 33 Arbuthnot, Latham & Co.
" 5 W. Brandts, Son & Co.
" 256 Stansbury & Co.

Holland, 2 cs. J. Parlevliet
Belgium, 15 chts. Clarke & Smith
E. Indies, 4 T. H. Allan & Co.

Madder
Holland, 6 pkgs. Williams, Torrey & Co., Ltd.
" 6 Ross & Deering

Myrabolams
E. Indies, 683 pkgs. J. Graves
" 6,725 W Shelcott
" 4,098 L. & I. D. Jt. Co.
" 2,732 Culverwell, Brooks & Co.
" 1,366 J. E. Scott
" 443 J. Graves
" 3,470 Beresford & Co.

Naphthalene
Germany, 21 pkgs. Forbes, Abbott & Co.
" 41 Fleming's Oil & Chem. Co., Ltd.

Orchella
Aden, 34 pkgs. Gray, Dawes & Co.
E. Indies, 63 Clarke & Smith
Ecuador, 62 Prop. Bull Wf.
Singapore, 467 L. & I. D. Jt. Co.
Germany, 10 J. E. Wilson

Sumac
Austria, 1,852 pkgs. Williams, Torrey & Co., Ltd.
Italy, 100 J. Graves
Singapore, 150 Union L. Co., Ltd.
" 1,000 J. Kitchin, Ltd.
Italy, 250 W. Barter & Co.
" 200 Italo-Brit. S. N. Co.
" 14 J. Terry & Co.

Tanners' Bark
Adelaide, 72 t. Beresford & Co.
Melbourne, 45 Goad, Rigg & Co.
Aden, 18 A. & W. Nesbitt
Belgium, 35 Leach & Co.
Germany, 2 T. H. Lee
Adelaide, 45 t. Baxter & Hoare

Turmeric
E. Indies, 98 pkgs. Beresford & Co.
" 92 L. & I. D. Jt. Co.
" 41 Clarke & Smith
Belgium, 217 Major & Field
" 98 Beresford & Co.

Valonia
A. Turkey, 126 t. J. Graves
" 200 Hicks, Nash & Co.
" 151 A. & W. Nesbitt
" 25 Adam Bros.

Dyestuffs *(otherwise undescribed)*
France, 15 pkgs. Skilbeck Bros.

Farina—
Holland, 30 pkgs. J. Barber & Co.
" 150 Ohlenschlager Bros.

French Chalk—
France, £65 Williams, Torrey & Field
Austria, 50 W. Harrison & Co.

Gamboge—
Saigon, 9 cs. L. & I. D. Jt. Co.

Glucose—
U. S., 400 pkgs 400 c. Fellows, Morton & Co.
" 1,000, 1,000 Baxter & Hoare
" 50 280 H. A. Litchfield & Co.
" 250 250 Fellows, Morton & Co.
France, 300 300 L. Norman & Co.
U. S., 500 500 "
" 250 250 Ohlenschlager Bros.
" 50 285 Prop. Scott's Whf.
" 100 600 Williams, Torrey & Co., Ltd.
" 1,350 1,353 R. G. Hall & Co.
" 1,000 1,000 C. F. Webster & Co.
" 125 680 L. Sutro & Co.
" 150 150 Prop. Chamberlain's Wf.
Germany, 6 46 J. Knill & Co.
France, 180 180 J. Barber & Co.
U. S., 600 600 L. & I. D. Jt. Co.
" 770 850 J. Barber & Co.
" 30 180 Page, Son & East
" 100 600 J. Knill & Co.

Glycerine—
Holland, £270 J. Owen
" 370 Spies Bros. & Co.
Germany, 133 Beresford & Co.
France, 90 Williams, Torrey & Co., Ltd.
Germany, 180 T. Palmer

Guano—
Belgium, 151 t. Anglo-Contl. Guano Wks.

Manganese—
Russia, 10 t. D. E. Recknell
Japan, 127 J. Swire & Sons

Manure—
Germany, 46 t. F. W. Berk & Co., Ltd.
France, 7 W. Grose & Co.
Germany, 10 R. W. Grieff & Co.

Methyl Alcohol—
Germany, 10 cks. Elkan & Co.
Belgium, 9 drs. W. G. Blagden
" 38 Stein Bros.

Mica—
France, £15 Flageollet & Co.
Germany, 18 L. & I. D. Jt. Co.
E. Indies, 290 W. M. Smith & Sons

Ochre—
France, 7 brls. Stobbs, Wilson & Co.
" 6 J. B. Orr & Co.
Germany, 6 cs. 22 pkgs. Phillipps & Graves
Italy, 20 brls. T. Palmer
Holland, 7 cs. 1 ck. Phillipps & Graves
France, 128 cks. 72 brls. W. Harrison & Co.
" 40 J. L. Lyon & Co.
" 16 H. A. Litchfield & Co.

Oxide of Iron—
Persian Gulf, 358 t. F. C. Strick & Co.
Italy, 3 pkgs. T. Palmer

Oxide of Tin—
Germany, 2 pkgs. H. Lambert

Painters' Colours—
Holland, 2 pkgs. G. Rahn & Co.
" 21 Phillipps & Graves
Germany, 5 "
Belgium, 24 Leach & Co.
U. S., 50 cs. A. C. Davey
Germany, 24 pkgs. L. & I. D. Jt. Co.
" 4 H. Lambert
Belgium, 11 2 cks. T. Palmer
U. S., 20 London P. D. Co.
Holland, 2 J. B. Orr & Co.
Germany, 15 Craven & Co.
" 30 T. H. Lee
" 5 Haeffner, Hilpert & Co.
Holland, 10 "
Italy, 6 brls. J. L. Lyon & Co.
France, 36 Flageollet & Co.
" 6 cks. B. & F. Wf. Co., Ltd.
Germany, 2 F. Shearing & Co.
Belgium, 10 L. Lyon & Co.
" 8 Magee, Taylor & Co
Holland, 2 R. Baelz & Co.
U. S., 2 Pinther, Johnson & Co.
France, 1 Bennett S. S. Co., Ld.
Italy, 7 H. A. Litchfield & Co.

Paraffin Wax—
U. S., 344 brls. C. H. Wall
Germany, 100 cs. W. Farmer
U. S., 1,902 H. Hill & Sons
" 73 Prod. Brokers' Co.
" 165 T. F. Creed
" 7,300 J. H. Usmar & Co.

Phosphate Rock—
Belgium, 170 t. Miller & Johnson
France, 198 D. de Pass & Co.
Belgium, 202 Anglo-Cont'l. Guano Works
France, 209 " "
Holland, 280 T. Farmer & Co., Ld
Belgium, 210 Lawes Manure Co., Ld.

Picric Acid—
Germany, 4 pkgs. T. H. Smith & Co.

Pitch—
France, 74 cks. C. B. Leighton
" 60 H. Hill & Sons
Sweden, 200 Sieyeking & Co.

Plumbago—
Holland, 20 cs. G. Rahn & Co.
Ceylon, 148 brls L. & I. D. Jt. Co.
" 739 T. Jordan & Co.
Holland, 12 cks. B. Gallaway
Ceylon, 82 brls. R. G. Hall & Co.
Germany, 117 cs. 37 cks, B. Gallaway
Cochin, 290 cks. Marshall & French

Potash—
Montreal, 366 c. Charles & Fox
Germany, 6 pkgs. L. & I. D. Jt. Co.
France, 87 Weatherley, Mead & Co.
" 300 c. F.W. Berk & Co., Ld.
" 170 Petri Bros.
" 17 pkgs. C. J. Capes & Co.
" 5 Prop. Hays Wf.

Potassium Bicarbonate—
Holland, 31 pkgs. A. & M. Zimmermann

Potassium Carbonate—
France, 50 c. J. A. Reid

Potassium Hydrate—
France, 10 cks. Spies Bros. & Co

Potassium Permanganate—
Germany, 20 pkgs. T. Palmer

Potassium Prussiate—
Germany, 28 pkgs. A. & M. Zimmermann

Pyrites—
Spain, 1,500 t. C. Tennant Sons & Co.
Italy, 24 Italo Brit. S. N. Co.

Rosin—
U. States, 253 brls. Tennant, Sons & Co.
" 2,300 H. Hill & Sons
" 500 J. H. Usmar & Co.
Holland, 8 G. Rahn & Co.
" 7,091 F. & S. Chinnery & Co.
" 1,400 Moore & Hole
" 10,571 Produce Brokers Co.
" 2,250 J. Knight & Sons
" 2,112 G. Nutter & Co.

Saltpetre—
Germany, 63 cks. J. Hall & Sons
" 17 G. Boor & Co.
" 130 P. Hecker & Co.
" 500 bgs. Anglo-Cont. Guano Works
Peru, 16,328 W. Montgomery & Co.
Chili, 16,992 "
Germany, 70 cks. Craven & Co.
" 656 E. D. Sassoon & Co.
" 1,188 Ralli Bros.
" 1,427 L. & I. D. Jt. Co.
" 4 H. Davies
U. States, 30 Anderson, Weber & Co.

Silica—
Germany, £83 A. Haacke & Co.

Soda—
Holland, 285 c. W. G. Jacobs

Sodium Acetate—
France, 26 pkgs. W. Baner & Co.
" 9 S. F. Waters & Co.
" 17 H. Lorenz

Sodium Chlorate—
France, 100 pkgs. A. Hughes

Sodium Hyposulphite—
Germany, 50 pkgs. A. & M. Zimmermann

Stearine—
Germany, 50 bgs. Ellis, Kislingbury & Co.
Holland, 324 H. Hill & Sons
France, 136 J. Goddard & Co.
" 286 cks. G. Boor & Co.

Sulphur—
Italy, 84 t. A. B. Curtis & Co.
" 112 G. Boor & Co.
France, 3 Bagnall & Bramwell
Italy, 30 J. Kitchin, Ld.
" 50 C. Tennant, Sons & Co.
" 26 Union L. Co., Ld.
" 24 Italo Brit. S. N. Co.
" 10 C. J. Capes & Co.
" 50 Soundy & Son

Talc—
E. Indies, £2,175 W. M. Smith & Sons

Tallow—
Melbourne, 123 cks. G. S. N. Co.
" 165 A. B. Curtis & Co.
Germany, 60 Goad, Rigg & Co.
" 52 pkgs. J. Wallich
" 2 cks. W. F. Dennis & Co.
" 58 C. B. Leighton
France, 9 H. Grey, Jr.
Melbourne, 78 S. J. Clark
Sydney, 200 J. Greig

N. Zealand, 12 R. Brooks & Co.
" 120 Low, Sons & Bedford
Melbourne, 74 Beresford & Co.
" 158 Arnati & Harrison
Sydney, 262 Dalgety & Co., Ld.
" 63 Cuthbert & Hall
N. Zealand, 300 Phœnix Whrvs. Co.
" 158 N. Z. L. & M. A. Co.
Sydney, 115 A. B. Curtis & Co.
" 131 D. C. Thomas & Sons
" 237 Kaul & Haenlein
" 166 J. Greig
" 20 Horne & Co.
N. Zealand, 52 Flack, Chandler, & Co.
" 165 Nelson Bros.
" 118 H. Deering
Tasmania, 88 Hicks, Nash, & Co.
Belgium, 7 H. Hill & Sons
" 1 J. L. Lyon & Co.
Adelaide, 24 Anning & Cobb
Sydney, 119 J. Owen
" 77 Elkan & Co.
N. Zealand, 14 N. M. & A. Co. of N. Z.
France, 27 Hoare, Wilson, & Co.

Tar—
Sweden, 10 brls. W. E. Bott & Co.

Tartaric Acid—
Holland, 33 pkgs. B. & F. Wf. Co., Ltd.
" 11 Northcott & Sons
" 42 Middleton & Co.

Turpentine—
Germany, 53 brls. W. Caudery & Co.
Savannah, 500 H. Hill & Sons
" 5,488 Produce Brokers' Co., Ltd.

Ultramarine—
Holland, 5 pkgs. Hernu, Peron, & Co.
" 3 Haeffner. Hilpert, & Co.
Belgium, 5 cs. W. Harrison & Co.
" 30 Leach & Co.
Holland, 6 Glaeser & Vogeler
Germany, 18 G. Steinhoff
" 5 Craven & Co.
Holland, 2 cks. Collett, Dodds, & Co.

Varnish—
Holland, 9 pkgs. Phillipps & Graves
Belgium, 5 Stobbs, Wilson, & Co.
U. States, 31 Pinchin, Johnson, & Co.
" 11 Wilkinson, Heywood, & Co.

Verdigris—
France, 4 pkgs. B. & F. Wf. Co., Ltd.

White Lead—
Germany, 10 cks. G. Meyer & Co.
" 14 Spies Bros. & Co.
" 14 Gross, Sherwood, & Co.
" 34 Elkan & Co.
" 20 Randall Bros.
" 20 Colthurst & Harding
Belgium, 6 W. A. Rose & Co.
Holland, 23 Burrell & Co.
" 36 A. & M. Zimmermann
Germany, 34 H. Lambert
" 31 Petri Bros.
" 69 Magee, Taylor, & Co.
" 28 W. Croft
" 25 N. J. Fenner & Co.
Holland, 103 Phillipps & Graves
Austria, 5 Magee, Taylor, & Co.
Norway, 20 brls. G. D. Jennings & Co.
Germany, 24 W. A. Rose & Co.
Holland, 20 Colthurst & Harding

Zinc Oxide—
Germany, 26 cks. M. Ashby, Ltd.
Holland, 50 Phillipps & Graves
U. States, 200 M. Ashby, Ltd.
Holland, 100 N. Smith
Germany, 165 J. Matton & Co.
Holland, 120 M. Ashby, Ltd.

Zinc Sulphate—
Holland, 6 pkgs. R. Morrison & Co.

Zinc White—
Germany, 125 cks. L. & I. D. Jt. Co.

LIVERPOOL.

Period ending June 2nd.

Acetate of Lime—
New York, 821 bgs.

Acetic Acid—
Rotterdam 10 btls

Ammonium Chloride—
Rotterdam, 4 bgs.

Amorphous Phosphorus—
Valparaiso, 4 cs. D. Mitchell

Antimony—
Valparaiso, 1 cs. D. Mitchell

Antimony—
Maranham, 33 cks.
Antofagasta, 450 bgs. Hainsworth, Watson & Co.

Barytes—
Antwerp, 22 bgs. 111 cks.
Rotterdam, 25

Benzine—
New York, 750 brls.

Boracic Acid—
Leghorn, 55 cks.

Caoutchouc—
Havre, 4 cks. Cunard S. S. Co., Ltd.

Ceresin—
Hamburg, 9 cs.

Chemicals *(otherwise undescribed)*
Hamburg, 3 cs. 1 bg.
Rotterdam, 1 ck.

Colours—
In transit, 50 cs.
Rotterdam, 39 cks.
Antwerp, 9 brls. J. T. Fletcher & Co.

Cottonseed Oil—
New York, 10 brls.

Cream of Tartar—
Rotterdam, 6 cks.
Bordeaux, 8
Barcelona, 5 Sachse & Klemn
" 7
Tarragona, 5 1 hd.

Dyestuffs—
Algorobilla
Coquimbo, 14 sks. Johns & Co.
Alizarine
Rotterdam, 4 cs.
Annatto
Bordeaux, 4 cks.
Extracts
New York, 60 brls.
Halifax, 120 cks Boutcher, Bacon & Co.
Bordeaux, 350
Antwerp, 5
Philadelphia, 75 brls.
Gambier
Singapore, 521 bls.
Myrabolams
Bombay, 868 bgs. D. Sassoon & Co.
" 2,154
Calcutta, 682
Sumac
Barcelona, 100 bgs. A. Ruffer & Sons
Palermo, 525 400 bls.
" 100 J. Kitchin
Tannin
Hamburg, 2 cks.
Turmeric
Bombay, 104 bgs.
" 190 D. Sassoon & Co.
Calcutta, 9
Valonia
Syra, 105 bgs. Tindroulis Bros.
Smyrna, 130 t. 3,789 bgs.
" 80 P. Th. Apostolo
" 205 Barry Bros.

Dyestuffs *(otherwise undescribed)*
Boston, 105 bxs. G. Warren & Co.

Glycerine—
Rotterdam, 10 carboys.
Hamburg, 4 dms. 12 cs.

Guano—
Bordeaux, 91 sks.

Kainit—
Hamburg, 1,072 bgs.

Manganese—
Coquimbo, 1,500 t.

Mineral White—
Trieste, 200 bgs. V. Pazze

Muriate—
Rotterdam, 20 cks.

Naphtha—
New York, 4,209 brls.

Nitrate—
Rotterdam, 135 bgs. 5 cks.

Ochre—
Rouen, 5 cks. Co-op. W'sale Soc.

Paint—
Antwerp, 48 cs.
Marseilles, 57
Rouen, 5 tins R. J. Francis & Co.
Hamburg, 1
In transit, 13 cks.

Phosphate—
Montreal, 120 t.

Phosphate Rock—
Coosaw, 2,075 t.
" 1,233 J. Adyer & Co.
Aak Put, 1,412 "

Pitch—
Marseilles, 151 brls.
Bordeaux, 59 cks.
Amsterdam, 14

Potash—
Hamburg, 19 cks.
Rouen, 32 Co-op. Wsale. Soc.
Montreal, 25 brls. Wilson, Paterson & Co.
" 5 C. Spence & Co.
Dunkirk, 19 cks.

Potassium Prussiate—
Rotterdam, 5 cks.

Pyrites—
Huelva, 5,173 t. Matheson & Co.

Rosin—
New York, 411 brls. Ralli Bros.
Savannah, 2,964
Bayonne, 844
Baltimore, 366
New York, 589

Saltpetre—
Hamburg, 100 brls. 16 cks.
" 302 bgs.
" 2,706 Ralli Bros.

Soap—
New York, 6 cs. Richardson, Spence & Co.
Constantinople, 5
Leghorn, 250 bxs. Duxel & Co.
" 20 cs.

Soapstone—
Bordeaux, 100 sks. 1 pkg.

Soda—
Rotterdam, 8 brls.

Sodium Chlorate—
Hamburg, 5 cks.

Sodium Nitrate—
Iquique, 15,714 bgs. Hainsworth, Watson & Co.
Pisagua, 13,149

Stearine—
Antwerp, 50 bgs.
In transit, 10 cs.

Sulphur—
Huelva, 1,444 t. Matheson & Co.
Catania, 20 cks. 100 kgs. 100 brls 40 bgs.

Talc—
Genoa, 100 bgs.

Tallow—
Boston, 150 tcs.
Rouen, 144 bgs. R. J. Francis & Co.
New York, 325 tcs. 378 hds.
Rouen, 143 bgs. 1½ bgs. Co-op. W'sale Soc.
Fray Bentos, 925 pps 190 hds. Liebig's Extract Meat Co.
Las Palmas, 192 cks. Warden & Co.
Buenos Ayres, 2
Philadelphia, 10 cts. 70 hds. 200 bls.

Tar—
Rouen, 20 cks. Co-op. W'sale Soc.

Tar Oil—
Rotterdam, 100 cks.

Tartar—
Naples, 7 cks.
Bordeaux, 11

Tartaric Acid—
Rotterdam, 34 cks.
Marseilles, 14 brls.

Turpentine—
Savannah, 1,000 brls.

Ultramarine—
Rotterdam, 25 cs. 18 cks.
Hamburg, 43

Varnish—
Antwerp, 4 cks.
Marseilles, 2 brls.
Boston, 1 Green & Whinery
Hamburg, 1

Waste Salt—
Hamburg, 101,600 kilos. 1,215 bgs. 1

White Lead—
Rotterdam, 55 cks.

Zinc Ashes—
Rouen. 21 cks. Co-op. W'sale Soc.

Zinc Oxide—
Antwerp, 97 brls.
Rotterdam, 45 cks.
Hamburg, 25

Zinc White—
Antwerp, 10 cks.
Hamburg, 20

HULL.

Period ending June 4th.

Acid—
Rotterdam, 14 botls. 4 cks. W. & C. L. Ringrose

Alkali—
Rotterdam, 9 cks. G. Lawson & Sons

Asbestos—
Bremen, 1 bl. Veltmann & Co.

Barium Oxide—
Hamburg, 10 cks. C. M. Lofthouse & Co.

Barytes—
Bremen, 22 cks. T. W. Flint & Co.
Antwerp, 21 Bailey & Leetham
Bremen, 22 H. F. Pudsey
" 21
Antwerp, 85

Chemicals *(otherwise undescribed)*
Bremen, 4 cs. Veltmann & Co.
" 4 Wilson, Sons & Co., Ltd.
Antwerp, 94 pks. " "
Copenhagen, 3 cks. " "
Bremen, 1 ck. 1 cs. J. Pyefinch & Co.
Dunkirk, 48 pks. Wilson, Sons & Co., Ltd.
Hamburg, 62 3 " "

Colours—
Riga, 140 cks. Wilson, Sons & Co., Ltd.
Danzig, 26 pkgs.
Rotterdam, 9 cks. 3 cs. G. Lawson & Sons
Antwerp, 72 cks.
" 8 brls. Bailey & Leetham
Stettin, 8 cks.
Bremen, 4 cs. 2 Veltmann & Co.
" 6 2 G. Malcolm & Son
Dunkirk, 70 brls. Wilson, Sons & Co., Ltd.
Rotterdam, 38 cs. 61 cks. 134 pks. W. & C. L. Ringrose
Flushing, 16 34 Zeeland S. S. Co.
Rotterdam, 11 30 brls. Hutchinson & Son
Antwerp, 4 Wilson, Sons & Co., Ltd.
Hamburg, 1 ck. Bailey & Leetham
Rotterdam, 38 cs. 61 cks. 172 pks. W. & C. L. Ringrose

Cottonseed Oil—
Constantinople, 50 brls. Wilson, Sons & Co.

Dried Blood—
St. Petersburg, 1,032 bgs. Wilson, Sons & Co.

Dyestuffs—
Alizarine
Rotterdam, 20 brls. Hutchinson & Son
" 38 cks. 131 pks. W. & C. L. Ringrose
Extracts
Boston, 170 cs. Wilson, Sons & Co., Ltd.
Myrabolams
Bombay, 6,997 bgs.

Sumac
Bordeaux, 50 bls. Rawson & Robinson

Valonia
Smyrna, 202 t.

Farina—
Harlingen, 250 bgs. W. & C. L. Ringrose
Danzig, 202
Stettin, 265 Wilson, Sons & Co.
Ghent, 224 bxs. ,, ,,
Antwerp, 10 bgs. ,, ,,

Glucose—
New York, 200 brls.

Lead Acetate—
Stettin, 34 cks. Wilson, Sons & Co., Ltd.
,, 3

Manure—
Ghent, 101 tns. Wilson, Sons & Co., Ltd.

Ochre—
Rouen, 158 cks.
,, 32 Rawson & Robinson

Paint—
Boston, 120 cs. Wilson, Sons & Co., Ltd.
,, 135

Paraffin Wax—
New York, 115 cs. Wilson, Sons & Co., Ltd.

Rosin—
Bordeaux, 5 cks.

Salt—
Hamburg, 7 bgs. H. Briggs, Sons & Co.

Saltpetre—
Hamburg, 10 kgs. C. M. Lofthouse & Co.
,, 50 bgs. Wilson, Sons & Co., Ltd.

Soda—
Rotterdam, 112 cks. Reckitt & Sons
,, 10 G. Lawson & Sons

Stearine—
Antwerp, 20 bgs. Wilson, Sons & Co., Ltd.

Tar—
Dunkirk, 4 cs. Wilson, Sons & Co., Ltd.

Tartaric Acid—
Rotterdam, 3 cks. G. Lawson & Sons

Ultramarine—
Bremen, 24 cks.
Rotterdam, 16 Hutchinson & Son
,, 3 G. Lawson & Sons

Varnish—
Rotterdam, 1 brl. Hearfield Bros.

Waste Salt—
Hamburg, 800 bgs. G. Lawson & Sons
,, 90 t. 250
,, 102 pks. Wilson, Sons & Co., Ltd.

White Lead—
Rotterdam, 12 cks.
Flushing, 25 Zeeland S. S. Co.
Rotterdam, 36 Sissons, Bro. & Co.
,, 9 Fewster & Co.
Antwerp, 26 Bailey & Leetham
Rotterdam, 19 Blundell, Spence & Co.
,, 12 Gibson Bros.
,, 25 A. Sanderson & Co.

GLASGOW.

Period ending June 4th.

Acetate of Lime—
New York, 210 bgs. 855 sks.

Aluminium—
Ghent, 20 cs.

Barytes Sulphate—
Ghent, 411 bgs.

Bleaching Powder—
New York, 60 cs.

Caoutchouc—
Amsterdam, 1 bg.

Colours—
Rotterdam, 14 cks. 1 bx. J. Rankine & Son

Cottonseed Oil—
Rotterdam, 25 brls. J. Rankine & Son

Cream of Tartar—
Marseilles, 12 cks.

Dyestuffs—
Alizarine
Rotterdam, 5 cks. 2 cs.
Aniline Colours
Rotterdam, 2 cs. J. Rankine & Son
Extracts
Ghent, 7 cks.
Madder
Marseilles, 10 brls.

Glucose—
New York, 10 brls.

Ochre—
Rouen, 34 cks.
Marseilles, 29 brls.

Painters' Colours—
Ghent, 7 cks.

Potash—
Montreal, 15 brls.

Rosin—
Savannah, 1,575 brls.

Saltpetre—
Hamburg, 12 cks.

Stearine—
Ghent, 200 bgs.
Hamburg, 20

Tartar—
Oporto, 5 cks.

Turpentine—
Savannah, 1,045 brls.

Waste Salt—
Hamburg, 610 bgs.

White Lead—
Ghent, 31 cks.
Rotterdam, 26

TYNE.

Period ending June 4th.

Barytes—
Antwerp, 11 cks. Tyne Steam Shipping Co.

Chemicals *(otherwise undescribed)*
Gothenburg, 1 cs.

Glucose—
New York, 185 brls. C. Hassell

Manganese—
Gothenburg, 1 cs.

Phosphate Rock—
Punta Gorda, 1,700 t. Langdale's Chemical Co.

Potash—
Hamburg, 9 cks. Tyne Steam Shipping Co.

Pyrites—
Stettin, 336 t.

Salt—
Harburg, 410 t.

Saltpetre—
Hamburg, 4 cks. Tyne Steam Shipping Co.
Harburg, 350 t.

Soap—
Rotterdam, 2 cs. Tyne Steam Shipping Co.

Sodium Nitrate—
Hamburg, 420 t.
Iquique, 17,976 bgs. J. Cameron, Swan & Co.
,, 1,220 t. Scott Bros.

Ultramarine—
Hamburg, 9 cs. Tyne S Shippin
Rotterdam, 2 cks.

Zinc Oxide—
Antwerp, 25 brls. Tyne S Shippin

GOOLE.

Week ending May 25th.

Alumina—
Rotterdam, 135 cks.

Antimony—
Boulogne, 1 ck.

Caoutchouc—
Boulogne, 10 cks.

Dyestuffs *(otherwise undescri*
Boulogne, 17 cs. 3 pkgs. 38 ck

Dyestuffs—
Alizarine
Rotterdam, 133 pkgs. 51 cks.

Farina—
Hamburg, 25 bgs.

Glucose—
Dunkirk, 80 bgs.

Ochre—
Calais, 122 cks.

Phosphate—
Ghent, 816 bgs.

Potash—
Dunkirk, 68 drs. 22 cks.

Potassium Carbonate—
Calais, 11 cks.

Saltpetre—
Rotterdam, 200 bgs.

Sodium Silicate—
Rotterdam, 1 ck.

Waste Salt—
Hamburg, 1,685 cks.

GRIMSBY.

Week ending May 28th.

Chemicals *(otherwise undescrib*
Hamburg, 16 pkgs.
Antwerp, 40 cks.

Farina—
Hamburg, 100 bgs.

Size—
Dieppe, 6 cks.
Antwerp, 9

Waste Salt—
Hamburg, 500 bgs.

EXPORTS OF CHEMICAL PRODUCTS

OF

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending June 1st.

Acetic Acid—
Townsville, 12 c. £11

Acids—
Huelva, 85 cs. £190
Natal, 1 bx. 23 pkgs. 27
Capetown, 40 cs. 33

Alkali—
Oamaru, 3 t. 3 c. £29
Shanghai, 1 7 5
Port Darwin, 1 7 26
Adelaide, 5 17 34
Algoa Bay, 2 30
Singapore, 19 8

Alum—
Capetown, 1 t. £7

Aluminous Cake—
Calcutta, 27 t. 5 c. £100

Ammonia—
Huelva, 12 cs. £12
Sydney, 20 17
Bombay, 10 c. 28

Ammonium Carbonate—
Montreal, 20 kgs. £28
Capetown, 1 ck. 8
Melbourne, 1 t. 30
Bombay, 6 cwt. 12
St. Petersburg, 210 pkgs. 369
Paris, 5 t. 6 c. 150

Ammonium Chloride
Batoum, 1 t. 10 c. £49
Yokohama, 15 25

Ammonium Nitrate—
Yokohama, 23 pkgs. £76

Ammonium Sulphate—
Antigua, 4 t. 19 c. £52
Grenada, 1 1 11
Hamburg, 50 15 550
Cologne, 55 550
Sourabaya, 200 2,200

Amorphous Phosphorus—
Hong Kong, 2 cs. £20
Capetown, 6 78

Arsenic—
Otago, 2 t. £27
Wellington, 2 30

Barium Nitrate—
New York, 1 t. £20

Borax—
Hamburg, 8 cks. £69
Otago, 10 c. 16
Harlingen, 10 cs. 22
Delagoa Bay, 7 cks. 30
Rotterdam, 10 25
B. Ayres, 7 t. 3 c. 214

Carbolic Acid—
Hiogo, 50 cs. £102

Caustic Potash—
Melbourne, 1 t. 14 c. £40
Casablanca, 1 5 31

Caustic Soda—
Rockhampton, 11 t. 12 c. £129
Batoum, 20 4 250
Algoa Bay, 1 6 43
Melbourne, 7 3 110
Adelaide, 5 8 57
Santos, 11 12 125
Sydney, 5 9 60
Calcutta, 9 7
Hamburg, 1 10 14

Chemicals *(otherwise undescri*
Huelva, 9 pkgs.
Sydney, 11
Wellington, 16 2 kgs.
Port Darwin, 35 cs.
Algoa Bay, 5
Lyttleton, 7
Capetown, 4
Fremantle, 7

Chloride of Lime—
Rockhampton, 54 t. 19 c.

Citric Acid—
Rotterdam, 5 c.
Hamburg, 1 t. 5 1 ck.
Bombay, 4 cs.
Lyttleton, 2
Auckland, 3 cks.
Napier, 1
Libau, 1 kg. 2
Sydney, 1 7
New York, 2 10
St. Petersburg, 30 kgs.
Genoa, 1 13
Batoum, 3
Cologne, 19

Coal Products—
Alizarine
Boston, 25 cks. £383
Aniline Dye
New York, 2 cs. £50
Aniline Oil
Barcelona, 10 rns. £160
Anthracene
Dusseldorf, 100 cks. £615
Anthracene Oil
Malmo, 150 drs. £13
Benzol
Terneuzen, 50 drs. £408
Rotterdam, 51 115 pkgs. 1,884
Calais, 30 cks. 295
Coal Tar Dyes
Calcutta, 1 cs. £42
Naphtha
Treport, 26 cks. £80
Calais, 2 rnlts. 12
Naphthalene
Barcelona, 5 cks. £11
Philadelphia, 137 bgs. 103
Hamburg, 8 100 98
Paraffin Wax
Auckland, 6 tks. £300
Pitch
Melbourne, 20 brls. £19
Constantinople, 200 70
Gijon, 214 329
Madras, 50 rnlts. 26
Singapore, 30 11
Alexandria, 300 99
Malmo, 15 t. 26
St. Nazaire, 885 1,320
New York, 1,284 cks. 673
St. Malo, 795 1,400
Baltimore, 1,512 bgs. 350
Dunkirk, 1,664 2,546
Tar
Calcutta, 200 rnlts. £108
Sydney, 150 drs. 32
Tar Oil
Stettin, 50 brls. £30
Dunkirk, 25 cks. 40
New York, 550 232
Telnol
Rotterdam, 24 cks. £69
Coal Products (*otherwise undes.*)
Melbourne, 382 pkgs. £160
Copper Sulphate—
Batoum, 5 t. £72
Paris, 12 9 c. 211
Alexandria, 1 1 17
Canterbury, 2 32
Wellington, 1 16
Aden, 1 1 16
Odessa, 3 2 44
Launceston, 2 29
Genoa, 25 366
Cream of Tartar—
Rockhampton, 5 c. £25
Sydney, 3 t. 2 179
Auckland, 5 25
Launceston, 5 22
Adelaide, 5 22
Disinfectants—
Sydney, 2 cs. £10
Port Darwin, 4 28
Launceston, 38 pkgs. 60
Penang, 100 drs. 35
Brisbane, 12 14
Hamburg, 75 cks. 375
Flowers of Sulphur—
Capetown, 11 t. 3 c. £143
Glycerine—
Montreal, 109 cs. £120
Toronto, 10 38
Shanghai, 4 c. 10
New York, 2 t. 60
Hypophosphite of Lime—
Philadelphia, 1 t. £276
Manure—
St. Vincent, 50 t. £500
Guadeloupe, 78 16 c. 869
Tamara, 200 2,700
Hamburg, 200 2,100
Mackay, 10 1 126
Antigua, 10 19 105
Guernsey, 3 15
Auckland, 15 81
St. Kitts, 14 18 139
Charente, 103 120
Rouen, 30 75
Teneriffe, 20 1 150
Leghorn, 60 8 424
Riga, 262 27 760
Rotterdam, 70 725
Valencia, 25 125
Muriatic Acid—
Antwerp, 7 c. £10
Nitric Acid—
Montreal, 5 cs. £11
Bombay, 27 c. 37

Oxalic Acid—
Paris, 5 t. £135
Stettin, 5 3 c. 200
Calcutta, 5 13
Phosphorus—
Melbourne, 5 c. £47
Potash—
Adelaide, 1 t. 17 c. £51
Potassium Bichromate—
Batoum, 1 ck. £16
Potassium Carbonate—
Oporto, 1 t. 3 c. £19
Potassium Chlorate—
Lisbon, 4 brls. £13
Auckland, 6 c. 9
St. Petersburg, 10 kgs. 32
Potassium Cyanide—
Yokohama, 5 cs. £26
Potassium Prussiate—
Sydney, 5 c. £24
Salicylic Acid—
Auckland, 2 cs. £9
Adelaide, 2 c. 30
Saltpetre—
Melbourne, 3 t. £65
Sydney, 1 11 c. 34
Lisbon, 3 13 74
Auckland, 2 44
Oporto, 9 17 197
Bahia, 1 14 39
Salts of Potash—
Townsville, 6 t. 5 c. £634
Adelaide, 2 10 255
Natal, 15 2,118
Salts of Soda & Lime—
Brussels, 4 cs. £67
Sheep Dip—
E. London, 78 cs. £156
Calcutta, 141 pkgs. 64
Melbourne, 640 593
Sydney, 90 182
Stettin, 7 c. 17
Soap—
Hamburg, 10 t. 10 c. £170
Cologne, 14 5 223
Soda—
Algoa Bay, 2 t. 5 c. £10
Colombo, 12 3
Soda Ash—
Sydney, 10 t. 2 c. £67
Melbourne, 25 2 167
Launceston, 5 3 37
Soda Crystals—
Newcastle, 10 t. 4 c. £33
Hong Kong, 1 4
Sodium Acetate—
Otago, 4 t. 19 c. £76
Sydney, 2 2 83
Sodium Bicarbonate—
Auckland, 4 t. £37
Constantinople, 10 c. 4
Trinidad, 1 8
Capetown, 10 4
Rockhampton, 15 5
Napier, 1 11
Hobart, 1 8
Sydney, 1 2 7
Newcastle, 1 7
Brisbane, 5 30
Sodium Carbonate—
Madras, 2 c. £10
Sodium Hypophosphite—
Rotterdam, 5 cs. £60
Sodium Silicate—
Adelaide, 5 t. 13 c. £28
Calcutta, 6 1
Strontium Nitrate—
New York, 5 t. 3 c. £145
Sulphur—
Mackay, 19 brls. £25
Fremantle, 2 t. 18
Sulphuric Acid—
Lyttleton, 14 cs. £11
Hong Kong, 10 8
Natal, 1 t. 18 c. 10 33
Amsterdam, 8 drs. 25
E. London, 5 8 20
Madras, 5 25
Bombay, 14 18
Tartaric Acid—
Auckland, 5 c. 3 cks. £50
Sydney, 2 t. 14 303
Rockhampton, 1 6
Hamburg, 10 55
Calcutta, 6 cs. 2 52
Lyttleton, 2 kgs. 12
Wellington, 7 40
E.London, 1 13
Launceston, 5 26
Melbourne, 8 60 368
Fremantle, 3 16
Rangoon, 2 12
Bombay, 3 3 25
Adelaide, 10 55

LIVERPOOL.

Week ending June 1st.

Acetic Acid—
Bombay, 1 c. £6
Alum—
Tripoli, 8 t. 10 c. £51
Seville, 3 2 1 13
Valparaiso, 5 12 27
Sydney, 3 18
Bombay, 9 14 52
Calcutta, 42 10 212
Cape Town, 1 6
Beyrout, 6 36
Galatz, 3 18
Havana, 4 10 23
Kyme, 18 5
Alexandretta, 8 48
Lisbon, 3 16 22
Singapore, 2 12
San Francisco, 15 45
Ibrail, 4 24
Aluminoferric—
Gothenburg, 20 t. 17 c. £64
Ammonia—
Coquimbo, 5 drs. £8
Ammonium Carbonate—
Genoa, 3 t. 10 c. 3 q. £78
Gothenburg, 1 10 41
Ammonium Chloride—
Rotterdam, 4 t. 1 q. £70
Trieste, 1 1 c. 3 35
Gothenburg, 15 1 22
Philadelphia, 13 1 2 320
Smyrna, 1 33
Leghorn, 10 18
Alexandretta, 1 10 50
Bombay, 3 15 127
Ammonium Sulphate—
Teneriffe, 2 t. 4 c £22
Arucas, 4 19 3 55
Gd. Canary, 53 11 1 548
Barcelona, 50 £500
Las Palmas, 50 12 522
Nantes, 85 18 990
Valencia, 132 1 5 1,363
Samarang, 133 11 2 1,350
Souerabaya, 71 1 820
Antiseptic—
Rio de Janeiro, 1 t. 12 c. 2 q. £5
Bleaching Powder—
Baltimore, 321 cks.
Boston, 1,208
Ghent, 66
Philadelphia, 165
Calcutta, 12 72 cs.
Genoa, 6
Havana, 21
Malaga, 4 brls.
Montreal, 125 40 pkgs.
Naples, 27
Odessa, 19
Oporto, 50
Pasages, 41
Rio de Janeiro, 7
Rouen, 14
San Sebastian, 44
Ghent, 73
New York, 863
Boracic Acid—
Antwerp, 2 t. 18 c. £77
Borate of Lime—
Rotterdam, 135 bgs. £117
Borax—
Antwerp, 1 t. £37
Montreal, 1 11 c. 46
Hamburg, 14 13 421
Melbourne, 1 98
El Pasco, 3 1 q. 7
Lisbon, 10 15
Malta, 4 7
Rotterdam, 22 cks.
Valencia, 4
Valparaiso, 20 cs.
Calcium Chloride—
M. Video, 3 t. £7
Toronto, 2 10 c. 6
Carbolic Acid—
Baltimore, 1 t. 4 c. 3 q. £55
Philadelphia, 1 61
New York, 1 2 84
Genoa, 3 3 8
Hamburg, 10 1 27
New Orleans, 8 3 3 309

Caustic Potash—
Montreal, 3 t. £125
Caustic Soda—
Alexandria, 66 dms.
Almeria, 16 5 cks.
Amsterdam, 92
Ancona, 87
Antwerp, 50 20 kgs.
Bari, 109
Batoum, 30
Bilbao, 33 110
Bombay, 91
Boston, 340
Bremen, 10 brls.
Calcutta, 107
Carthagena, U.S.A. 10 dms.
Leghorn, 141
Lisbon, 60
Malaga, 178 6
Melbourne, 82 3 pkgs.
Messina, 80
M. Video, 60
Montreal, 455 125
New York, 1,233
Pernambuco, 36
Piræus, 50
Rio Grande, 30 25 kgs.
Rio de Janeiro, 39
St. John's, Nfld 35
Savanilla, 10
Seville, 125 150 brls. 29 cks.
Stettin, 36
Tarragona, 30
Valencia, 95 6
Valparaiso, 150
Yokohama, 422 50 kgs.
Baltimore, 50 135
Barbadoes, 6
Cape Town, 10
Genoa, 80
Hamburg, 257
Havana, 110
La Guayra, 10
Madrid, 415
Odessa, 100
Oporto, 40
Para, 6
Rouen, 19
San Francisco, 139 20 bxs.
Santander, 42
Sourabaya, 55 57
Syra, 50
Talcahuano, 42
Vigo, 12 cks.
Adelaide, 60
Algoa Bay, 4
Barcelona, 746 20 86 brls.
Galatz, 43 20 kgs.
Genoa, 257
Havana, 30
Hiogo, 200
Kurrachee, 36
Leghorn, 60
Messina, 20
New Orleans, 50
Pelotas, 20
Rotterdam, 52 5 2
San Francisco, 236
Valencia, 25
Venice, 25
Chemicals (*otherwise undescribed*)
Tampico, 60 t. 15 c. £373
Oporto, 5 1 q. 9
Bombay, 2 10 87
Genoa, 1 15 57
Iquique, 13 22
Malta, 6 9
Canada, 4 cs. 61
Copper Sulphate—
Rouen, 78 t. £1,909
Rotterdam, 2 27
Trieste, 1 15
Venice, 10 150
Valencia, 4 18 78
Antwerp, 13 3 1 194
Boston, 10 2 9
Dunkirk, 4 19 75
Calcutta, 10 8
Bombay, 10 8
Barcelona, 34 7 410
Tarragona, 38 18 3 598
Leghorn, 5 1 73
Naples, 5 1 2 70
Marseilles, 218 8 3 3,322
Nantes, 17 18 268
Galatz, 1 5 18
Bordeaux, 238 5 3,649
Disinfectants—
Calcutta, 1 t. £6
Dried Blood—
Gd. Canary, 2 t. 2 £13
Guano—
Malaga, 10 t. £95

Gypsum—
Marseilles, 1 t. 18 c. £6
New York, 35 12 127

Iron Sulphate—
Valparaiso, 41 3 q. £92

Magnesia—
Beyrout, 2 cs.

Magnesium Chlorate—
Bombay, 16 brls.

Magnesium Chloride—
Bombay, 22 t. 8 c. 3 q. £61

Magnesium Sulphate—
Seville, 24 t. 11 c. £110

Manure—
Santa Cruz, 38 t. 7 c. £344
Valencia, 75 500
Barbadoes, 40 10 390
St. Nazaire, 259 19 1 q. 1,433
Gd. Canary, 13 49

Muriatic Acid—
Bombay, 1 cs. £10

Nitric Acid—
Coquimbo, 13 cs. £32

Ochre—
New York, 4 cks.

Oxalic Acid—
Bordeaux, 1 t. 2 c. £28

Oxide of Iron—
Santos, 57 t. 5 c. £140
New York, 2 18 53
B. Ayres, 27 7 69

Paint—
Alexandria, 20 kgs.
Amapala, 10 cs.
Amsterdam, 10 dms.
Callao, 4
Constantinople, 1 80 190 pkgs.
Genoa, 1 cs. 16 cks.
Iquitos, 5
Kingston, J., 700 3
Maranham, 2
Pelotas, 25
Piræus, 3
Rotterdam, 1 27
Rouen, 5
Sanchez, 2
San Juan, 240 4 2brls.
Savanilla, 3 36
Santiago, 2
Antwerp, 13
Barbadoes, 6
B. Ayres, 2
Cadiz, 40
Calcutta, 80 10
Chalcis, 3
Camperico, 20
Colon, 85
Demerara, 12
E. London, 6
Galatz, 50
Gothenburg, 4 60 bgs.
Guayaquil, 40 5 brls.
Hamburg, 450
Hong Kong, 28
Lisbon, 48
London, Ont., 71
Marseilles, 15
Mayaquez, 2
Melbourne, 40
Mexico, 3
Montreal, 48 25
Nassau, 2
New York, 3 cs. 3 206 100
Odessa, 25
Panama, 7
Para, 40 8
Pernambuco, 15
Philadelphia, 230
Port Natal, 20
Rio Grande, 4 cs. 4
Rio de Janeiro, 20
Rosario, 2
Santander, 29
Seville, 5 cs. 4
Shanghai, 30 541 8
Sierra Leone, 8
Sulina, 5
Toronto, 19 23 12
Trinidad, 40
Valparaiso, 24 350 55 5
Vera Cruz, 5
Callao, 3
Gd. Canary, 50
Hamburg, 14
Mayaquez, 4
Oporto, 30
Penang, 1
Piræus, 9 1
Puerto Cabello, 4 cs. 10 bls.
Rio Grande do Sul, 50 f'kns.
St. John's, Nfld., 5
Sydney, 4 cks.
Talcahuano, 50

Painters' Colours—
Bahia, 3 cs. 5 brls. 2 cks. 21 kgs.
Baltimore, 190 25
Bermuda, 1 23
Bordeaux, 1 bx.
B. Ayres, 16 50
Para, 19 3 38 16tcs.
Alexandria, 22 1 73
Ancona, 32
Antwerp, 12
Beyrout, 15
Cape Town, 2
Montreal, 15
N. Orleans, 153 10
New York, 4 6 200

Phosphorus—
Hiogo, 5 cs. £65
Yokohama, 10 94
Havana, 15 182

Pitch—
Cette, 1,972 t.
Sherbro, 25 brls.
Callao, 10
Sierra Leone, 20

Potassium Bichromate
Bordeaux, 2 t. 13 c. £90

Potassium Carbonate—
Montreal, 4 c. £7

Potassium Chlorate—
Malmo, 1 t. £48
Naples, 4 227
Hamburg, 2 123
Antwerp, 1 50
Gothenburg, 5 235
Constantinople, 4 c. 20
Barcelona, 1 50
Shanghai, 2 13 173
Genoa, 3 14 174
Havana, 2 10 145
Oporto, 10 24
Philadelphia, 2 10 117
St. Petersburg, 2 10 117
Danzig, 5 240
Hiogo, 7 10 367
New York, 24 1,303

Potassium Silicate—
Valencia, 8 t. 11 c. 2 q. £51

Potassium Stannate—
Bombay, 1 t. 1 c. 2 q. £87

Salt—
Accra, 20 t.
Alligator Pond, 5
Amsterdam, 120
Conakey, 10
Hillsboro', 86
Rotterdam, 134
Santos, 4
Trangesundwyburg, 565 t.
Valparaiso, 12 t. 7 c.
Akassa, 400
Baltimore, 48
Barbadoes, 49½
Benin, 20
Boston, 560
Brisbane, 15
Calcutta, 8,547
C. C. Castle, 25
Demerara, 90
Ghent, 150
Hamburg, 17
Iceland, 115
Melbourne, 25
Montreal, 1,702
New Orleans, 465
Opobo, 100
Rangoon, 1,000
Rio de Janeiro, 11
St. John's, Nfld., 80
Santos, 7¼
Sierra Leone, 815
Trieste, 40¾
Valparaiso, 817 12
Warre, 4
Antwerp, 50
Barcelona, 10 cks.
B. Ayres, 40
Newport News, 100
New York, 345 140 cs. 62 bdls.
Old Calabar, 50
Pisagua, 7
Quebec, 575
Sydney, 250
Talcahuano, 1 3

Salt Cake—
Genoa, 2 t. 13 c. £6
Philadelphia, 211 3 752
Montreal, 61 7 103
Baltimore, 105 18 277

Saltpetre—
Rio Grande, 10 c. £12
Almeria, 1 t. 25
Syra, 3 15 79
Pernambuco, 9 19 6 q. 230
New York, 37 19 610
Montreal, 1 5 26

Sheep Dip—
Cape Town, 10 c. 2 q. £18

Soap—
Cairo, 12 cs.
Constantinople, 22
Demerara, 1,921 bxs.
Kingston, Ja., 56
Malta, 40 60
Montreal, 2
Rotterdam, 90 dms. 131
Shanghai, 10,647 183
Toronto, 400
Vera Cruz, 1
Accra, 40
Akassa, 40
Algoa Bay, 771 75
Amsterdam, 1,000
Antigua, 40
Axim, 165
Barbadoes, 13 cks. 26
Benin, 150
Bombay, 775
Calcutta, 250 pkgs. 20
C. C. Castle, 15
Cape Town, 550
Carthagena, 3
Curacao, 50
E. London, 200
Genoa, 130
Gibraltar, 315
Gd. Canary, 560
Hong Kong, 70
Kingston, Ja., 400
Lagos, 323
Lanzarotte, 40
Montreal, 25 1
Mossel Bay, 500
New York, 350 1 pkg. 79
Para, 1
Piræus, 20 bdls. 12 2 brls. 6 tcs.
Port Elizabeth, 500 50
Port Natal, 2,018 20
Port Said, 21
Rio de Janeiro, 9
St. John's, Nfld., 365
S. Thomas, W.I., 400
Savanna la Mar, 200
Teneriffe, 434 2
Tientsin, 73 82
Trinidad, 1,400
Warre, 400
Antwerp, 120
Bilbao, 5
Calcutta, 20
Callao, 6
Cape Town, 365
Gibraltar, 16
Gd. Bassa, 20
Limassol, 1
Rosario, 2

Soda—
Callao, 30 cks.

Soda Alkali—
Buffalo, 60 brls.
Odessa, 50
Toronto, 115

Soda Ash—
Alexandria, 100 brls.
Beyrout, 10
Ghent, 10 cks.
Gothenburg, 608 bgs.
M. Video, 50 75
Philadelphia, 1,357
Piræus, 50
Rio Grande, 255 113 20 kgs.
Rio de Janeiro, 50
Salonica, 100
Syra, 200
Bombay, 48
Boston, 416 1,512
Calcutta, 20
Callao, 25
Canada, 32 392
Cartagena, S., 20
Hamburg, 200
Havana, 3
Oporto, 15
Rosario, 25
Smyrna, 15
Talcahuano, 4
Valparaiso, 20
Baltimore, 704 1,120
B. Ayres, 271
,, 529
Corfu, 200
Leghorn, 8
Malaga, 6
New York, 123 2507 800 282 tcs.
Piræus, 10
Yokohama, 328 cks.

Soda Crystals—
Boston, 644 brls.
Montreal, 867
Rio Grande, 50
Canada, 20 50 kgs.
Demarara, 10
Havana, 4
Montreal, 420
San Francisco, 750
Sydney, 167
Valparaiso, 20
Malaga, 7 3 cks.
Smyrna, 50

Soda Salts—
Montreal, 15 cks.

Sodium Arseniate—
New York, 3 cks.
Havre, 6
Montreal, 6

Sodium Biborate—
Antwerp, 22 t. 1 c. 2
Rio de Janeiro, 4

Sodium Bicarbonate—
B. Ayres, 69 cks.
Calcutta, 510 kgs.
Callao, 10
Hamburg, 155 pkgs
Naples, 150
Seville, 110 bls. 150
Stettin, 50
Alexandretta, 36
Algoa Bay, 50
Antwerp, 20
Barcelona, 150
Bombay, 260
Bordeaux, 30
Canada, 240
Carthagena, S., 50
Copenhagen, 64 10
Dunkirk, 10
Durban, 40
Genoa, 415
Gijon, 12 brls
Havana, 110
Havre, 115
Lisbon, 10
Madrid, 80
Marseilles, 68 pkgs.
Melbourne, 300
Odessa, 7
Santander, 20
Stockholm, 6
Sydney, 100
Malaga, 60 10
Malta, 86
Yokohama, 2,000

Sodium Bisulphite—
Lisbon, 17 c. 3 q.

Sodium Carbonate—
Boston, 336 brls.
New York, 168
Rotterdam, 50

Sodium Chlorate—
New York, 5 t.
Rotterdam, 10 c.
Antwerp, 1
Hamburg, 20 kgs.

Sodium Nitrate—
Bari, 5 t. 14 c. 3 q.
New York, 18 1
Las Palmas, 20 6
Carthagena, 6 6 3

Sodium Silicate—
Bilbao, 150 cks.
Carthagena, U.S.A., 10 brl
Madrid, 35
Santander, 4

Sodium Sulphate—
Valencia, 17 t. 10 c.
Montreal, 2 19 3 q.

Sulphur—
Rouen, 100 t. 17 c.
Porto Alegre, 19 2 q.
Pernambuco, 12 1
Havana, 30
New Orleans, 1
New York, 13
St. Nazaire, 804 bgs.
Calcutta, 4 kgs. 30 drs. 67 b
Montreal, 650 bgs. 73
Boston, 1,669
Antwerp, 20

Sulphuric Acid—
Coquimbo, 8 cs.

Superphosphate—
Teneriffe, 2 t. 5 c. 1 q.
Gd. Canary, 10 7 2

Tallow—
C. C Castle, 4 cs.
Ibrail, 10 cks.
Botterdam, 7 15 brls.
Alexandria, 31
Bilbao, 11

Bombay, 5
B. Ayres, 1
Oporto, 4
Rouen, 3
Sierra Leone, 4
Almeria, 7

Tar—
Sierra Leone, 20 kgs. 25½ brls.
Sherbro, 25
Valparaiso, 50

Varnish—
Bilbao, 4 cks.
Bombay, 2
B. Ayres, 5 pkgs.

White Lead—
Demerara, 60 kgs.

Zinc Chloride—
New York, 3 t. 1 q. £23
Bombay, 11 3 q. 167

GLASGOW.

Period ending June 4th.

Ammonium Sulphate—
Trinidad, 51 t. 12 c. £594
Demerara, 40 4½ 448
St. Kitts, 6 13½ 62

Benzol—
Rotterdam, 10 t. 10½ c. £192

Bichrome—
Genoa, 7 t. 2 c. £206

Bleaching Powder—
Calcutta, 10 t. £118

Copper Sulphate—
Alexandria, 2 t. 6 c. £30

Creosote—
Bordeaux, 85½ t. £120

Fustic—
Quebec, 3 t. 2½ c. £31

Linseed Oil—
Cape Colony, 3 t. 11½ c. £86
Chili, 5 12½ 136

Manganese—
New York, 10 t. 3 c. £98

Manure—
Trinidad, 125 t. 1¾ c. £907
Demerara, 30 273
St. Kitts, 6 13¾ £32 17s.
Jamaica, 5 3 £43

Paint—
Cape Colony, 1 c. £34
Straits, 3 t. 13¾ £41 15s.
Chili, 38 16 £657
Jamaica, 130
Gothenburg, 8¾ £6 15s.
Calcutta, 10 £93

Painters' Colours—
Cape Colony, 2 t. 4¾ c. £45
Straits, 2 25
Hong Kong, 3 19¾ 51

Paraffin Wax—
Cape Colony, 4 t. 12¾ c. £144 13s.
Bilbao, 1½ 60
Rotterdam, 12 12

Pitch—
Riga, 5 t. 1¼ c. £8 17s.
Dieppe, 430
Chili, 16 10½ £24 10s.

Potassium Bichromate—
Calcutta, 8 c. £20
Genoa, 4 t. ½ 125

Potassium Chloride—
Bilbao, 5 t. ¾ c. £50

Rosin Oil—
Cape Colony, 189¾ c. £65
Stockholm, 4 t. 2¾ £55 6s.

Saltpetre—
Quebec, 1 t. 1¾ c. £95

Sheep Dip—
Chili, 2 t. 10 c. £73

Soap—
Antigua, 2½ t. £50
Jamaica, 8¾ 140
Chili, 1 12½ c. 31

Sodium Bichromate—
Genoa, 9 t. 8½ c. £235

Sulphuric Acid—
Natal, £20

Tallow—
Rotterdam, 19 t. 2 c. £671 5s.

Tar—
Riga, 98 t. £240
Christiania, 20 brls. 10

White Lead—
Cape Colony, 5 t. 16¾ c. £106
Amsterdam, 5¾ 7
Chili, 2 3¾ 36

Zinc White—
Straits, 7 t. 9½ c. £108
Chili, 2 4½ 16lbs. 23

HULL.

Period ending June 4th.

Alkali—
Fiume, 35 dms.
Harlinger, 60 cks.
New York, 273

Alum—
Bombay, 1,015 cks.
Copenhagen, 2
Gothenburg, 323 slbs.

Ammonium Carbonate—
Antwerp, 5 kgs.

Bleaching Powder—
Bombay, 100 dms.
Boston, 223 cks.
Drontheim, 2
Stettin, 30

Caustic Soda—
Fiume, 18 dms.
Genoa, 40
Helsingfors, 35
Konigsberg, 18
Stettin, 2 cks.
Trieste, 13
Wyburg, 100

Chemicals (*otherwise undescribed*)
Bremen, 24 cs. 17 pkgs.
Bombay, 70 cks.
Bergen, 1
Christiania, 10 6 pks.
Copenhagen, 7 3
Flushing, 10
Gothenburg, 1 10 cs. 5 kgs.
Genoa, 20
Hamburg, 4 304 21 pkgs.
Helsingfors, 6
Libau, 25
New York, 80 100 kgs.
Rouen, 15
Rotterdam, 40
Stettin, 1 pkge. 14 5 1
Trieste, 4

Cottonseed Oil—
Amsterdam, 51 c.
Antwerp, 370
Bremen, 50
Christiania, 7
Drontheim, 132
Flushing, 34
Gothenburg, 170
Hamburg, 756
Marseilles, 7
Naples, 40
Rotterdam, 1,043
Trieste, 238

Creosote—
Copenhagen, 5 cks.
Oporto, 920 brls.

Dyestuffs (*otherwise undescribed*)
Antwerp, 3 cks. 2 dms.
Boston, 11
Christiania, 12 bls.
Hamburg, 26
St. Petersburg, 9 cs.
Stettin, 12 230 bgs. 1 kg.

Linseed Oil—
Antwerp, 7 c.
Bombay, 538
Bergen, 209
Boston, 52
Christiania, 540
Christiansand, 7
Drontheim, 104
Hamburg, 453
Kurrachee, 34
Rotterdam, 78
Stavanger, 51
Trieste, 146

Manure—
Christiania, 10 bales.
Hamburg, 300 bgs.

Naphtha—
Antwerp, 15 cks.

Ochre—
Hamburg, 22 cks.

Painters' Colours—
Amsterdam, 10 cks.
Antwerp, 17 197 kgs.
Bremen, 2
Bombay, 35 cs. 1 80 pks.
Bergen, 2 70 dms.
Boston, 28
Christiania, 28 49
Copenhagen, 1 14 2
Dunkirk, 16
Drontheim, 1 9 4
Genoa, 30
Hamburg, 1 32
Harlingen, 1
Helsingfors, 1
Kurrachee, 280 pks.
Leghorn, 21
New York, 315
Naples, 10
Riga, 36
Rouen, 18
Rotterdam, 22 1 pkge.
Stockholm, 1 2
S. Petersburg, 5 38 1 dm.
Stettin, 8 100 pks.
San Francisco, 110

Pitch—
Dunkirk, 118 t.
Flushing, 81
Gothenburg, 1 cs.
Genoa, 235
New York, 500 bgs.
Riga, 1 ck.

Potassium Chlorate—
Stockholm, 100 kgs.

Sheep Dip—
Bombay, 180 dms.
Kurrachee, 140

Soap—
Hamburg, 32 cs.

Soda Ash—
Helsingfors, 54 cks.
Hango, 5
San Francisco, 302

Soda Crystals—
Helsingfors, 32 cks.

Sodium Nitrate—
Helsingfors, 16 bgs.

Sodium Sulphate—
Harlingen, 450 bgs.

Sulphur—
Trieste, 100 bgs.

Tallow—
Bombay, 13 cks.

Tar—
Amsterdam, 9 cks.
Bergen, 4
Christiania, 5
Gothenburg, 150
Hamburg, 2
Rotterdam, 4
Stettin, 1

Varnish—
Antwerp, 1 ck. 1 dm. 2 cs.
Bombay, 100
Copenhagen, 1
Gothenburg, 2
Hamburg, 1 1
Harlingen, 1 tin.
Naples, 20
Rouen, 1

Zinc White—
Bombay, 100 dms.

TYNE.

Period ending June 4th.

Alkali—
Rotterdam, 5 t. 17 c.
Gothenburg, 5 11
Savona, 39 14
Copenhagen, 10 7

Alumina Sulphate—
Rouen, 10 t. 1 c.

Ammonium Sulphate—
Hamburg, 100 t.

Anthracene—
Rotterdam, 23 t. 18 c.

Antimonial Lead—
Genoa, 8 t.

Arsenic—
Genoa, 10 c.

Asbestos—
Antwerp, ¾ c.

Bleaching Powder—
Leghorn, 4 t. 12 c.
Naples, 14
Drontheim, 20
Gothenburg, 13
Hamburg, 10 5
Antwerp, 34 13
St. Petersburg, 108 3
Danzig, 29 18
Lisbon, 14 18
Rotterdam, 68 13
Aalesund, 1 2
Copenhagen, 59 7

Caustic Soda—
Genoa, 38 t. 8 c.
Naples, 17
Rotterdam, 5 4
Gefle, 4 18
Gothenburg, 50 4
Hamburg, 19 11
Antwerp, 10 2
St. Petersburg, 60 7
Arendal, 4 18
Rouen, 10 3
Lisbon, 4 12
Copenhagen, 15 18

Colours—
Rotterdam, 3 c.

Glycerine—
Rotterdam, 7 t. 19 c.

Litharge—
Hamburg, 1 t. 1 c.

Magnesia—
Genoa, 13 c.
Hamburg, 3
Antwerp, 1

Ochre—
Christiania, 3 t. 4 c.

Oxalic Acid—
Genoa, 1 t. 15 c.

Paint—
Gothenburg, 11 c.
Archangel, 13

Painters' Colours—
Genoa, 11 c.
Aalborg, 1 t. 2

Soda—
Rotterdam, 107 t. 12 c.
Archangel, 13
Bergen, 4 15
Jersey, 29 11

Soda Ash—
Copenhagen, 20 t. 13 c.
Laurvig, 10 9
Lisbon, 5 6
Bergen, 3 8

Sodium Hyposulphite—
Genoa, 1 t.
Lisbon, 1

Sodium Sulphate—
Genoa, 5 t.

Sulphur—
Rotterdam, 30 t.
Kattenge, 120
Antwerp, 15 1 c.
Christiania, 25

White Lead—
Copenhagen, 3 t. 19 c.
Archangel, 1 2
Stavanger, 1 8
Lisbon, 2 2

GOOLE.

Week ending May 25th.

Bleaching Powder—
Ghent, 30 cks.

Chemicals (*otherwise undescribed*)
Antwerp, 2 cks.
Hamburg, 14

Coal Products (*otherwise undesc'd.*)
Hamburg, 50 cks.

Dyestuffs (*otherwise undescribed*)
Antwerp, 1 ck.

Manure—
Ghent, 200 bgs.

Pitch—
Antwerp, 557 t.
Dunkirk, 151

GRIMSBY.

Week ending May 28th.

Ammonium Sulphate—
Barcelona, 150 bgs.

Chemicals (*otherwise undescribed*)
Antwerp, 2 pkgs.
Dieppe, 2 2 drs.
Hamburg, 2 cks. 10

Coal Products (*otherwise undesc'd.*)
Dieppe, 40 cks.

Magnesia—
Barcelona, 160 bgs.

Phosphorus—
Barcelona, 10 cs.

PRICES CURRENT.

WEDNESDAY, June 15th, 1892

Prepared by Higginbottom and Co., 116, Portland Street, Manchester.

The values stated are f.o.r. at maker's works, or at usual ports of shipment in U.K. The price in different localities may vary.

	£	s.	d.
Acids:—			
Acetic, 25 %, and 40 % .. .. per cwt.	7/- & 11/-		
,, Glacial .. .. ,,	50/-		
Arsenic S.G., 2000° .. .. ,,	0	14	6
Fluoric .. .. per lb.	0	0	3¾
Muriatic (Tower Salts), 30° Tw. .. .. .. per bottle	0	0	10
,, (Cylinder), 30° Tw. .. .. ,,	0	3	0
Nitric 80° Tw. .. .. per lb.	0	0	2¼
Nitrous .. .. ,,	0	0	1¾
Oxalic .. .. nett	0	0	3
Phosphoric, 1750° .. .. ,,	0	1	2½
Picric .. .. ,,	0	0	10¼
Sulphuric (fuming 50 %) .. .. per ton	15	10	0
,, (monohydrate) .. .. ,,	5	10	0
,, (Pyrites, 168°) .. .. ,,	3	5	0
,, (,, 150°) .. .. ,,	1	5	0
,, (free from arsenic, 145°) .. .. .. ,,	1	6	0
Sulphurous (solution) .. .. ,,	2	15	0
Tannic (pure) .. .. per lb.	0	1	2
Tartaric .. .. ,,	0	0	11¾
Arsenic, white powdered .. .. nett per ton	11	17	6
Alum (loose lump) .. .. ,,	5	5	0
Alumina Sulphate (pure) .. .. ,,	5	0	0
,, ,, (medium qualities) .. .. .. ,,	4	15	0
Aluminium .. .. per lb.	2s. 8d. to	0	3	2
Ammonia, ·880=28° .. .. per lb.	0	0	3
,, =24° .. .. ,,	0	0	1¾
,, Carbonate .. .. nett	0	0	3¼
,, Muriate .. .. per ton	21	0	0
,, ,, (sal-ammoniac) 1st & 2nd .. per cwt.	35/- & 33/-		
,, Nitrate .. .. per ton	40	0	0
,, Phosphate .. .. per lb.	0	0	10½
,, Sulphate (grey) London .. .. .. per ton	9	17	6
,, ,, (grey) Hull .. .. ,,	9	15	0
Aniline Oil (pure) .. .. per lb.	0	0	7
Aniline Salt ,, ... ,,	0	0	6½
Antimony .. .. per ton	45	10	0
,, (tartar emetic) .. .. per lb.	0	1	0
,, (golden sulphide) .. .. ,,	0	0	10
Barium Chloride .. .. per ton	7	10	0
,, Carbonate (native) .. .. ,,	3	10	0
,, Sulphate (native levigated) .. .. .. ,,	45/- to 75/-		
Bleaching Powder, 35 % .. .. nett ,,	7	10	0
,, Liquor, 7 % .. .. ,,	2	10	0
Bisulphide of Carbon .. .. ,,	11	15	0
Chromium Acetate (crystal) .. .. per lb.	0	0	6
Calcium Chloride .. .. per ton	2	5	0
China Clay (at Runcorn) in bulk .. .. .. ,,	17/6 to 35/-		
Coal Tar Dyes:—			
Alizarine (artificial) 20 % .. .. per lb.	0	0	8¾
Magenta .. .. ,,	0	3	9
Coal Tar Products			
Anthracene, 30 % A, f.o.b. London .. per unit per cwt.	0	0	10½
Benzol, 90 % nominal .. .. .. per gallon	0	1	8
,, 50/90 ,, ... ,,	0	1	4½
Carbolic Acid (crystallised 40°) .. .. .. per lb.	0	0	4⅜
,, (crude 60°) .. .. per gallon	0	1	2
Creosote (ordinary) .. .. ,,	0	0	1
,, (filtered for Lucigen light) .. .. ,,	0	0	2
Crude Naphtha 30 % @ 120° C. .. .. .. ,,	0	0	9
Grease Oils, 22° Tw. .. .. per ton	2	2	0
Pitch, f.o.b. Liverpool or Garston .. .. .. ,,	1	8	0
Solvent Naphtha, 90 % at 160° .. .. .. per gallon	0	0	11
Coke-oven Oils (crude) .. .. ,,	0	0	3
Copper .. .. per ton	46	3	9
,, Sulphate .. .. ,,	15	15	0
,, Oxide (copper scales) .. .. ,,	45	0	0
Glycerine (crude) .. .. ,,	13	0	0
,, (distilled S.G. 1250°) .. .. ,,	45	0	0
Iodine .. .. nett, per oz.	0	0	9
Iron Sulphate (copperas) .. .. per ton	1	12	6
,, Sulphide (antimony slag) .. .. ,,	2	0	0
Lead (sheet) for cash .. .. ,,	12	0	0
,, Litharge Flake (ex ship) .. .. ,,	14	0	0
,, Acetate (white ,,) .. .. ,,	25	10	0
,, ,, (brown ,,) .. .. ,,	17	5	0
,, Carbonate (white lead) pure .. .. .. ,,	20	0	0
Nitrate .. .. ,,	20	0	0
Lime, Acetate (brown) .. .. per ton	5	17	6
,, ,, (grey) .. .. ,,	10	15	0
Magnesium (ribbon and wire) .. .. per oz.	0	2	3
,, Chloride (ex ship) .. .. per ton	2	7	6
,, Carbonate .. .. per cwt.	1	17	6
,, Hydrate .. .. per ton.	17	0	0
,, Sulphate (Epsom Salts) .. .. per ton	2	19	0
Manganese, Sulphate .. .. ,,	17	15	0
,, Borate .. .. per cwt.	2	12	6
,, Ore, 70 % .. .. per ton	4	5	0
Methylated Spirit, 61° O.P. .. .. per gallon	0	2	6
Naphtha (Wood), Solvent .. .. ,,	0	4	6
,, ,, Miscible, 60° O.P. .. .. .. ,,	0	4	4½
Oils:—			
Cotton-seed .. .. per ton	19	10	0
Linseed .. .. ,,	20	0	0
Lubricating, Scotch, 890°—895° .. .. .. ,,	7	5	0
Petroleum, Russian .. .. per gallon	0	0	4½
,, American .. .. ,,	0	0	5½
Potassium (metal) .. .. per oz.	0	3	7
,, Bichromate .. .. nett	per lb.	0	0	4½
,, Carbonate, 90% (ex ship) .. .. .. per ton	18	0	0
,, Chlorate .. .. per lb.	0	0	7
,, Cyanide, 98% .. .. ,,	0	2	2
,, Hydrate (Caustic Potash) 80/85 % .. per ton	22	10	0
,, ,, (Caustic Potash) 75/80 % .. ,,	21	10	0
,, ,, (Caustic Potash) 70/75 % .. ,,	20	15	0
,, Nitrate (refined) .. .. per cwt.	1	2	6
,, Permanganate .. .. per cwt.	3	10	0
,, Prussiate Yellow .. .. per lb.	0	0	9⅞
,, Sulphate, 90 % (ex ship) .. .. .. per ton	9	15	0
,, Muriate, 80 % (do.) .. .. .. ,,	7	17	6
Silver (metal) .. .. per oz.	0	3	4¼
,, Nitrate .. .. ,,	0	2	10
Sodium (metal) .. .. per lb.	0	3	4
,, Carb. (refined Soda-ash) 48 % .. nett per ton	6	2	6
,, ,, (Caustic Soda-ash) 48 % . ,, ,,	5	5	0
,, ,, (Carb. Soda-ash) 48% .. .. ,, ,,	5	7	6
,, ,, (Carb. Soda-ash) 58 % .. .. ,, ,,	6	5	0
,, ,, (Soda Crystals) .. .. .. ,, ,,	3	9	0
,, Acetate (ex-ship) .. .. ,,	16	5	0
,, Arseniate, 45 % .. .. ,,	11	0	0
,, Chlorate .. .. per lb.	0	0	8
,, Borate (Borax) .. .. nett, per ton.	29	0	0
,, Bichromate .. .. ,, per lb.	0	0	3¾
,, Hydrate (77 % Caustic Soda) (f.o.b.) nett pr. ton (10 ton lots)	11	10	0
,, ,, (74 % Caustic Soda) ,, ,, ,, (10 ton lots)	11	5	0
,, ,, (70 % Caustic Soda) ,, ,, ,, (10 ton lots)	10	5	0
,, ,, (60 % Caustic Soda) .. ,, ,, (10 ton lots)	9	2	6
,, ,, (60 % Caustic Soda, cream) (f.o.b.) ,, (10 ton lots)	8	17	6
,, Bicarbonate .. .. ,,	6	12	6
,, Hyposulphite .. .. ,,	7	15	0
,, Manganate, 25% .. .. ,,	11	10	0
,, Nitrate (95 %) ex-ship Liverpool .. .. per cwt.	0	8	0
,, Nitrite, 98 % .. .. per ton	30	0	0
,, Phosphate .. .. ,,	15	10	0
,, Prussiate .. .. per lb.	0	0	7¾
,, Silicate (glass) .. .. per ton	5	7	6
,, ,, (liquid, 100° Tw.) .. .. .. ,,	4	5	0
,, Stannate, 40 % .. .. per cwt.	3	5	0
,, Sulphate (Salt-cake) .. .. per ton.	1	16	6
,, ,, (Glauber's Salts) .. .. ,,	1	15	0
,, Sulphide .. .. ,,	7	15	0
,, Sulphite .. .. ,,	6	12	6
Strontium Hydrate, 100% .. .. ,,	8	10	0
Sulphocyanide Ammonium, 95 % .. .. per lb.	0	0	7½
,, Barium, 95 % .. .. ,,	0	0	5
,, Potassium .. .. ,,	0	0	7¾
Sulphur (Flowers) .. .. per ton.	8	0	0
,, (Roll Brimstone) .. .. ,,	6	5	0
,, Brimstone: Best Quality (nominal) .. ,,	5	0	0
Superphosphate of Lime (26 %) .. .. ,,	2	7	6
Tallow .. .. ,,	27	0	0
Tin (English Ingots) .. .. ,,	105	0	0
,, Crystals .. .. per lb.	0	0	7
Zinc (Spelter) .. .. per ton	22	5	0
,, Chloride (solution, 96° Tw.) .. .. .. ,,	6	10	0

THE

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CURRENT TOPICS.

AIR POLLUTION AND FOGS.

IT is about fourteen months since the Air and Fog Analysis Committee of the Manchester Field Naturalists' Society published their preliminary report, and now a further report has been published, giving the results obtained at the various stations in the London and Manchester districts, where tests were made.

The report is a very interesting one, and cannot fail to impress those who read it with the importance of making determined efforts to ameliorate the smoke and fog nuisance in our large centres, even if it is a Herculean task.

The sulphurous acid present in fog is undoubtedly the most objectionable constituent, and on looking at the figures given by the committee for three of the worst days in last year, viz., December 21st, 22nd, and 23rd, the amount present was formidable in the extreme. For a really black fog London seems to hold the palm, while for a medium fog Manchester and London seem pretty much alike. The variance in the amount of SO_3 present at different times of the day is peculiar and apparently follows no rule. This perhaps is accounted for by the direction and variation of the wind during the day. For instance, in the same locality on two days on which virtually the same conditions prevailed, the lowest amount of SO_3 found on one day was in the evening, while on the other it was in the evening that the highest amount found was recorded.

From the figures given, the average amount of sulphur dioxide present in fogs of different intensities calculated as milligrams of SO_3 per 100 cubic feet are approximately for a dense black London fog 34 milligrams, an ordinary thick yellow fog, such as prevails in London, Manchester, and other large towns during the winter, 19 to 20, while a light suburban fog contains about 8. Since 3 milligrams and less is the usual amount of sulphur dioxide present in towns during winter on clear, bright days, the super-eminent importance of tackling the fog fiend from an hygienic standpoint alone is amply substantiated. As, however, a full account of the observations made will be found elsewhere in these columns, it is only necessary to add that we notice the results are expressed differently from those given in the preliminary report, and it is to be hoped that the method now adopted will be adhered to, and also the *rationale* of the tests fully detailed, not only for the benefit of those interested in this matter, but that the records obtained may be comparable with the results which will be obtained in the future.

LEGISLATION FOR THE CHEMICAL TRADE.

There have been several measures of great importance to the chemical and allied trades before Parliament during the last few weeks. The importance of some of these measures lies in the fact that they are prejudicial to the interests of manufacturers. One of these was the Alkali, etc., Works

Amendment Bill. We pointed out at some length recently the many objections to this bill becoming law, but it has, however, been rushed through Parliament, and on Tuesday was read for the third time in the House of Lords, so that it now only awaits the sanction of Her Most Gracious Majesty the Queen prior to becoming law. The Irwell and Mersey Prevention of Pollution Bill is likewise advancing well in the Upper House, and should ere long be ready to receive the Royal sanction. Should it do so it will at least have merited its success, which is considerably more than we can say for its precursor, the Alkali, etc., Works Bill.

MILK ADULTERATION.

The number of prosecutions recently instituted for either diluting or else "separating" milk shew that the inspection and work of the county and borough officials is being carried out to a good purpose, and in a highly satisfactory manner. Out of some eight or nine cases it is noticeable that the fines inflicted are on the whole lenient to say the least.

The standard of comparison which is taken is by no means too high, so that the advantage lies with the vendor, under which circumstances offences of this nature are aggravated the more, and should call for the infliction of such fines as will peremptorily restrain those who infringe the law in this direction.

We trust that those who have endeavoured to put down malpractices of this kind will not relax their endeavours but accomplish the suppression of this most fraudulent and highly objectionable practice by continually bringing the matter into prominence through the recurrence of their convictions.

MANCHESTER AIR AND FOGS.

BY means of a staff of observers in different parts of the city and suburbs, a large amount of information has been collected regarding the nature and distribution of fog. The points to which attention has been particularly directed by the Town Gardening Committee of the Field Naturalist Society are—(*a*) The time during which the fog lasted; (*b*) whether generally distributed or confined to particular localities; (*c*) its nature in different parts of the city and suburbs, especially as regards density and odour. There was, on the whole, much less fog last winter than during the previous one, and hardly any really serious and prolonged occurrence of fog. This is largely owing to the fact that the barometer was, during almost the whole period, remarkably variable. The anticyclonic periods, during which the air is still, were, indeed, only four in number—the beginning and end of November, the middle of December, and the beginning of April, and each of these were accompanied by fog extending more or less over several days. The following are the dates when fogs have prevailed:—(*a*) Dense fog lasting all day, or nearly so—October 24, November 6, 7* 23*, and 27, December, 21, 23, 24, and 25, January 4, 9, 12, 15, 19, and 20, April 1, 2, 5, 6, and 11. (*b*) Fog confined either to morning or evening—October 25, 29, 30, and 31, November 3, 4*, 5*, 14*, 21, 22*, 24, 26, 29, and 30, December 2, 7*, 11*, 14*, 17, 20, 22, and 30*, January 7*, 8*, 10, 11*, 14*, 17, 18, 22*, 23*, and 25*, and 26, February 6*, 8*, 10*, 11*, 12*, 13*, 16*, 18*, 22, and 24, March 13, 18, 21*, 23, 24*, 29, 30, and 31, April 3, 4*, 12*, and 19*.

When the fog was confined to some particular part of the city, the date is marked with an asterisk. Thus on 20 separate occasions (two of these partial) dense fog has been recorded, while on 55 occasions (30 of these partial) the fog has been confined to the morning or evening hours, usually eight to eleven o'clock in the morning, or six to nine in the evening. It may be added that the whole of the October fogs were shallow, hardly extending above the houses, so that blue sky could be seen directly overhead, even through the fog. Summarising a mass of details which have been collected, we draw the following conclusions with regard to the fogs of the past winter:—1. That fogs almost invariably follow a steady or steadily rising barometer. 2. They were when partial most likely to occur in the neighbourhood of the streams of water; for instance, there was frequently dense fog over the Irwell, near Broughton, and over the Medlock near All Saints', when the rest of the city was almost clear. 3. They were most suffocating and noxious in that part of the course of the Irwell between Cornbrook and Blackfriars 4. The most central part of the city of Manchester, the triangle having the Exchange Station, the Central Station, and London Road Station as its corners, was usually more free from fog than the surrounding area. This was particularly the case with the fogs which extended over only a part of the day. 5. The London fogs, so far as the more central parts of the city are concerned, were more noxious and contained more sulphurous acid than the corresponding Manchester fogs, though the difference is not very considerable. Liverpool seems to have fewer fogs, a clearer air, and really bad fogs seldom occur.

The following figures are summarized from the committee's journal as given in the Manchester Guardian. The observations were made during the three days just before Christmas-day, which were chosen because at that time the worst fog of the season occurred. It being impossible in a short notice to go into details, such a reference will afford some idea of the general character of the details in hand. The amount of sulphurous acid (SO_3) is expressed in milligrams per 100 cubic feet:—

Dec. 21.	Owens College	morning	16·48	
	Ditto	afternoon	22·60	Rather thick fog, objects visible 70 to 100 yds.
	Ditto	evening	13·15	
	Hulme	morning	21·10	
	Ditto	evening	15·56	
	Town Hall, Manchester	afternoon	19·15	
	Blackfriars-street, Salford	midday	27·00	
	Oldfield-road, Salford	morning	32·24	
	University College, London	morning	20·50	Yellow fog
Dec. 22.	Owens College, Manchester	morning	12·69	Fog much as yesterday, but clearing somewhat towards afternoon.
	Ditto	evening	9·24	
	Hulme, Manchester	midday	14·56	
	Blackfriars-street, Salford	morning	15·40	
	Oldfield-road, Salford	morning	22·62	
	University College, London	midday	39·10	Dense black fog.
	Ditto	evening	14·70	
	St. Bartholomew's Hospital, London	afternoon	49·50	
Dec. 23.	Owens College	morning	12·00	Fog more objectionable than yesterday, clearing somewhat at midday in suburbs
	Ditto	evening	18·31	
	Hulme	afternoon	11·25	
	Town Hall, Manchester	midday	20·53	
	Oldfield-road, Salford	morning	25·83	
	University College, London	midday	12·96	Yell'w fog
	St. Bartholomew's Hospital, London	midday	24·60	Fog all day
	Hampstead, London		7·50	Light fog.

In order to afford a means of judging the significance of these figures it may be stated that in clear bright weather the amount of sulphurous acid observed in towns is in summer 0·2 to 0·5, and in winter 1·7 to 3, and that the odour of sulphurous acid can usually be perceived when the amount rises to 5.

MOISTURE CONDENSED FROM THE AIR.

Rime was collected from aucuba leaves in York Place, Oxford-road, and found to yield 89 parts per million of SO_3. It had accumulated during the period December 21 to December 25. Rime condensed on glass plates at the same place during the period December 19 to December 25 gave 386·6 parts per million of SO_3, and "blacks" at the rate of nearly two tons per square mile of surface, and yet we have it on the testimony of the late Dr. Angus Smith, that rain containing 41 parts of acid per million is fatal to trees, and almost completely cuts off grass. Aucubas in York Place, on which snow and rime were allowed to remain, were soon transformed into a mass of dead leaves, the leaf buds being also destroyed, while those from which the snow and rime were shaken soon after it fell, remained green and kept their leaves through the spring. It may be added that fresh fallen rain and snow collected about the time referred to showed from 10 to 40 parts per million of sulphurous acid, while a drizzly sleet gave 70·6 parts per million.

INTENSITY OF LIGHT IN TOWNS AND COUNTRY.

By means of a solution which undergoes change when exposed to light it has been possible to make relative measures of the intensity and amount of light received in different parts of the city and suburbs. The total amount of light (of sunlight there was none) received in Manchester and Salford, during the three days in question was only 5 per cent. of that recorded at Didsbury during the same period, so completely does the fog cut off the actinic rays. Moreover, arrangements

were made about this time (namely, December 27) to take the amount of light afforded by one hour's sunshine at midday, when the air was clear. The values obtained were :—Grindelwald (Switzerland), 20·0; Torquay, 11·0; Malvern Hills, 7·5; Kew, Hampstead, Didsbury, 3 to 4; York Place, Oxford-road, 1·2; Manchester and Salford (City), 0·8. Thus the amount of light received in three minutes' sunshine in the Grindelwald was equivalent to that of the whole three days in question in Manchester and Salford. Such a result illustrates in a striking manner the disadvantage under which plants (and for the matter of that human beings) exist in our large towns.

SOCIETY OF CHEMICAL INDUSTRY.

LONDON SECTION.

ARRANGEMENTS FOR THE ANNUAL GENERAL MEETING.

THE meeting of the Society held on June 13th was the last of the session. and Mr. Tyrer therefore took the opportunity, in the course of the proceedings of calling attention to the efforts that had been made by the committee of the London section to ensure that the annual general meeting for this year should not fail to attain, and if possible to surpass the high standard that had been set by those which had been held in the provinces on previous occasions. The details have already appeared in the columns of this journal, and it only remains now for members to make their choice of the numerous attractions offered them. Mr. Tyrer also seized the occasion to urge the claims of the guarantee fund upon the London members, holding that it would be but just for all who could possibly afford it, to contribute. It seems to us that the best way or collecting an adequate guarantee fund is to induce those members, who in virtue of their official position receive prominence on occasions of the kind, to contribute really substantial sums, as an earnest of their recognition of the honour and publicity conferred upon them.

PROFESSOR VIVIAN B. LEWES ON OIL GAS.

Professor Lewes has lately conferred upon quite a number of Societies lengthy lucubrations upon things gaseous, and on Monday night last he described the results of some experiments on the effect of different temperatures and conditions in breaking down petroleum into oil gas. The following table gives an idea of what variations may be produced :—

	A.	B.	C.	D.	E.	F.
Temperature.....	500°C.	700°C.	900°C.	1000°C.	900°C.	900°C.
Size of retort.....	1′ 10″ × 4″	1′ 10″ × 4″	1′ 10″ × 4″	1′ 10″ × 4″	1′ 6″ × 2″	3′ 6″ × 9½″
Cu. Ft. gas	12	60	72	11·8	18·3	20·2
Percentage residuals	59·1	22·7	12·7	84	92	98
Illuminating power—						
Candles per 5 cubic ft.	54·3	50·7	57·1	42·2	46·0	49·6
Candles per gall.	131·5	608·4	822·2	708·9	846·4	927·1
Grains of sperm per gall. ..	15,782·4	73008·0	98668·3	85075·2	101568·0	116,659·2
Analysis of gas—						
Unsaturated hydrocarbons ..	39·13	36·56	36·55	22·04	29·79	33·16
Saturated ,, ..	42·41	49·45	53·97	54·83	62·30	45·15
Hydrogen	13·58	6·26	11·86	21·54	4·79	19·65
Acetylene	0·052	0·084	0·33	0·40	—	—

The experiment F was carried out in a Patterson's retort.

The author considered that it appeared from the results of some of his experiments that ethylene at a temperature of above 800°C broke up into acetylene and marsh gas, and that the former might polymerise into benzene, while if the rise of temperature was rapid and extended above 1100°C, complete decomposition into hydrogen and carbon might occur. The production of acetylene from naphthalene was also observed.

DISCUSSION.

Mr. Tyrer, in opening the discussion, took the opportunity of pointing out that a great deal of work like the present had been foreshadowed by researches of Professor Armstrong, begun some years ago. It was greatly to be regretted that he had not thought fit to favour the Society with further information on the subject, the field abandoned being a rich one. Mr. Fairley wished to know what rate of flow of the oil into the retorts was maintained, and what was the pressure inside. Mr. Watson Smith said that he should have expected during the condensation of acetylene into benzene and higher hydrocarbons mentioned by the author, that the formation of diphenyl would occur. Mr. Boverton Redwood remarked that it was necessary to give the paper more consideration than could be bestowed upon it during the time taken for its delivery (which it is well to state had been so short as to render it well nigh unintelligible). He considered that there was an immense future for oil gas in this country, and was disposed to think that heavy Russian hydrocarbons might be best dealt with by first converting them into lighter oils and then gasifying these, rather than by effecting the conversion directly. Mr. Foster recalled some experiments on the illuminating power of pure hydrocarbons of the paraffin and olefine series, and complained that a paper of his had been rejected by the Chemical Society Mr. W. J. A. Butterfield wished to know the temperature and conditions which governed the breaking down of naphthalene into acetylene mentioned by the author, as the former was rather a burden to the gas manager, who would rejoice if it could be converted into the latter, which was an excellent illuminant. He had understood Professor Lewes to say that in certain residuals 20 per cent. of benzene occurred. The conditions under which this formation took place would be interesting to know, always provided that the author did not mean hydrocarbons of the *benzene series*, when he said *benzene*. It also seemed to him (the speaker) that a heavier oil than was used by the author might yield better results. Professor Lewes in reply, said that a flow of about two pints per hour was used, and that the colour of the oil gas was a valuable indication of the progress of the cracking process. He agreed with Mr. Watson Smith that diphenyl would probably be one of the products of polymerisation. With regard to the production of benzene mentioned by Mr. Butterfield, he had meant to convey that there was 40% of "50% benzol" obtained, that is, 20% of benzene. He thought that heavier oils would yield too much pitch to be of use.

"PEAT" IN THE ISLE OF DOGS.

During certain engineering operations, a seam of "peat" has been found underlying the London clay near the Isle of Dogs. It was very wet, and darkened on exposure. The seam contained branches and trunks of trees, and varied in thickness from two to six feet. The dried material contained half its weight of ash, and therefore could scarcely be looked upon as a promising fuel. The ash was composed of 62% of silica and 21% of alumina and ferric oxide, the balance being chiefly calcium carbonate.

MR. WATSON SMITH ON THE SOLUBLE BITUMINOUS CONSTITUENTS OF CERTAIN JAPANESE COALS.

Mr. Watson Smith contributed a paper which was an extension of his recent note on the subject. He had examined two other Japanese coals obtained near the celebrated Miike coal, which had given rise to the investigation, and found that they, unlike it, contained only small quantities of soluble bituminous constituents. He had also compared them with various cannels, which all gave small figures not exceeding 1%. It appeared that the soluble constituents were simply slightly altered resinous bodies derived from the vegetable organisms from which the coal had been formed.

A vote of thanks to Mr. Tyrer for his admirable occupancy of the chair during his term of office, brought the meeting to a close.

PERSONAL.—The chair of chemistry at Berlin, rendered vacant by the death of the late Prof. Von Hofmann, has been offered to Prof. Emil Fischer, of Würtzburg. This gentleman has gained his notoriety chiefly in connection with his works on the synthesis of grape sugar. He was born in Prussia in 1852, studying chemistry at Bonn and Strassburg.

Parliamentary Jottings.

PETROLEUM AND THE SUEZ CANAL.

In the House of Commons last week, in answer to Mr. J. R. Kelly,

Mr. J. W. Lowther said: The papers relating to the Inter-Departmental Commission with reference to the provisional regulations of the Suez Canal Company are in the printer's hands, and will be distributed as soon as possible.

Mr. J. R. Kelly asked the Under-Secretary of State for Foreign Affairs whether he would name the provision, if any, in the concessions of the Suez Canal Company giving authority to make what had hitherto been and was optional, by its mere motion compulsory and binding, in the matter of the exclusion, by virtue of the provisional regulations, of petroleum tank-steamers from the canal, when such vessels did not happen to have been constructed in accordance with the terms of such regulations.

Mr. J. W. Lowther.—This question refers to a matter of law—viz., the construction of the charter and concessions of the Canal Company, which is at present the subject of litigation in the Egyptian Courts, and it is not within the province of Her Majesty's Government to express any opinion upon it.

Sir R. Temple asked the Under-Secretary for Foreign Affairs whether a conference of the Inter-Departmental Commission (British) of 1891 was held before or after the adoption of the principle of allowing ships laden with bulk oil to pass along the Suez Canal; whether he would state on what date or dates the Commission met; and whether any rules on the subject were adopted, modified, or abandoned, in consequence of direct negotiations between the Commission and the Government directors of the Suez Canal or the company itself.

Mr. J. W. Lowther.—The date of the meeting of the Inter-Departmental Committee was December, 1891. The action of the committee and its results will appear from the papers which have been laid, and which will be distributed as soon as possible.

Mr. Maclure asked whether, in view of the possible dual system of rules adopted by the Suez Canal Company and the Egyptian Government, Her Majesty's Government would urge the Suez Canal Company to suspend the provisional regulations until Egypt had declared in the matter or abandoned her police rights in reference to bulk petroleum in or on the waters of the Suez Canal, or in the ports situated in or along and adjacent to the canal, and pending the decision of the Egyptian Courts as to the legality or illegality of the provisional regulations.

Mr. J. W. Lowther.—I replied yesterday to an almost identical question put to me by the hon. member for West Limerick, and I have nothing to add to the answer which I then gave.

Mr. Philipps asked whether there had been any communication of a special character relating to the passage of bulk petroleum through the Suez Canal between the Foreign Office and the Suez Canal Company prior to the admission of the principle of the passage of ships laden with bulk oil by the directors of the Suez Canal, including the nominees of the Government, on the administration of the Suez Canal.

Mr. J. W. Lowther.—No such communication as is referred to in the hon. member's question took place.

READINGS OF BILLS.

In the House of Lords:—

The Alkali Works and Amendment Bill was read a third time, and passed.

In the House of Commons:—

On the motion of Sir A. Rollit, the Technical and Industrial Institutions Bill was considered and read a third time.

The Public Health Acts Amendment Bill was considered and read a third time.

THE MERSEY AND IRWELL POLLUTION BILL IN THE LORDS.

This Bill, which has already passed the House of Commons, came before a Select Committee of the Lords on Tuesday, Lord Poltimore presiding.

Mr. Pope, Q.C., for the Joint Committee of the Mersey and Irwell, the promoters, explained that the object of the bill was to give powers beyond those of the Rivers Pollution Act, 1876. The Joint Committee were a body charged with a special duty, and they found that the powers of the Act of 1876 were insufficient. The condition of the rivers in the manufacturing districts of Lancashire and Cheshire was, notwithstanding that Act, simply a scandal and a disgrace. He objected to the locus of the Corporations of Bury and other bodies in that neighbourhood who had lodged petitions against the bill.

After an argument the committee decided that the petitioners should be heard.

Mr. Alderman J. Thompson, of the Manchester Corporation, was then called. He said that one of the defects of the Act of 1876 was the dilatory character of its operation. Their local Act in Manchester against pollution had worked satisfactorily, and they felt satisfied that if the Joint Committee had the same powers there would be very little cause to complain. They had in Manchester not only prevented cinders being washed into the river, but they had also prevented sewage being washed in.

Mr. J. T. Hibbert, chairman of the Lancashire County Council and of the Joint Committee, examined by Mr. Fitzgerald, said that public opinion on sanitary matters in Lancashire and Cheshire had so far ripened that the sanitary authorities were as a rule alive to their duties. He thought there was a growing feeling on the part of the authorities to carry out the laws. Manchester was spending £100,000. on new sewage works, and if the authorities higher up the streams were to spend in proportion they would be carrying out the laws better than they were doing now. He thought the local authorities and the manufacturers could trust to the good sense of the Joint Committee not to harass them unduly. The committee represented two millions of inhabitants, and the largest towns. The powers asked for under the bill were the very smallest they could ask for. Anyone who saw the rivers of Lancashire would say that they were a disgrace to the country. Some of the rivers that ran into the Irwell were a great deal worse than the Irwell itself. The witness was cross-examined as to the opposition of the Local Government Board to the scheme.

Other witnesses, including Mr. Hulton, clerk to the County Council, were called.

The committee unanimously decided that the Bill should proceed, and the clauses were subsequently considered.

OUTPUT OF BRITISH MINERALS.

THE Home Office has recently issued some statistics showing the annual output of the principal minerals produced in the United Kingdom during the past year. The total value at the mines and works of the thirty-three different kinds of minerals which the country produces is £91,000,000., of which, in round numbers, coal contributed £74,000,000.; stone, £9,000,000., and iron ore £3,000,000. The habitat of the minerals also is interesting. Arsenic comes altogether from Cornwall, Devonshire, and Glamorgan; aluminium from Northumberland and Worcestershire; cobalt and nickel ore from Flintshire; phosphate of lime from Bedfordshire and Cambridgeshire; plumbago from Cumberland. The term United Kingdom includes the Isle of Man and Ireland, the quantity and the value in pounds are given, as likewise are the figures for 1890. It will be seen by comparing the total value of the minerals produced in 1891 that there has been a marked decrease. The following are the returns:—

TABLE I.

GENERAL SUMMARY OF THE MINERAL PRODUCE OF THE UNITED KINGDOM AND THE ISLE OF MAN.

Description of minerals.	1890. Quantity.		1891. Quantity.	Value at the mine and open works.
				£
Alum clay (Bauxite)	Tons.	11,527	10,763	3,228
Alum shale	,,	6,420	5,474	684
Antimony ore	,,	14	15¼	250
Arsenic	,,	7,276	6,048	58,593
Arsenical pyrites	,,	5,114	5,095	4,370
Barytes	,,	25,353	26,876	32,120
Bog ore	,,	14,512	16,075	8,037
Clays (excepting ordinary clay)	,,	3,308,214	3,222,035	943,896
Coal	,,	181,614,288	185,479,126	74,099,816
Cobalt and nickel ore	,,	84	Nil.	—
Copper ore	,,	12,136	8,836	20,21
Copper precipitate	,,	345	322	4,35
Fluorspar	,,	268	141	18
Gold ore	,,	575	14,117	12,20
Gypsum	,,	140,293	151,708	60,0
Iron ore	,,	13,780,767	12,777,689	3,355,8
Iron pyrites	,,	16,018	15,463	8,0
Jet	lbs.	1,228	766	1
Lead ore	Tons.	45,651	43,859	356,7
Lignite	,,	2,630	4,664	1,3
Manganese ore	,,	12,444	9,476	6,2
Ochre, umber, etc.	,,	19,068	13,602	20,1
Oil shale	,,	2,212,250	2,361,119	707,1
Petroleum	,,	35	100	1
Phosphate of lime	,,	18,000	10,000	20,0
Salt	,,	2,146,849	2,043,571	976,8
Slates and slabs	,,	434,352	415,029	987,2
Stone, etc.	,,	—	—	8,693,7
Sulphate of strontia	,,	10,276	8,061	4,0
Tin ore	,,	14,911	14,488	735,3
Uranium ore	,,	22	31	6
Wolfram	,,	104	138	3,3
Zinc ore	,,	22,041	22,216	113,4
Total value	—		—	91,238,0

espite the net decrease of the output there are several minerals of rtance which show increase. Amongst these are notably barytes, ore (chiefly used for gas purification), and coal. The output of um is likewise increased, the total amount raised having been ined in England alone. There are likewise considerable increases me of the rarer minerals, more particularly gold ore, uranium ore, wolfram. The output of gold ore is more than double that of , while the two latter have experienced an increase of from 30 to . It is perhaps superfluous to call attention to the fact that the le of the gold ore raised was obtained from Wales. Lignite also s an increased production of 50%. Amongst the most notable nces of decrease, cobalt and nickel ore show the greatest, the pro- ion in 1890 being 84 tons, while in 1891 it was nil. The pro- ion of bauxite, which is solely derived from Ireland, is pretty much same, the slight deviation, however, being towards decrease rather increase. Manganese ore likewise shows a decrease to about one- l compared with 1890. The whole of the amount produced with exception of 251 tons raised in England was obtained from Wales. falling off in the output of salt is very marked; in England the iency amounting to something over 100,000 tons as compared with production in 1890, though the output in Ireland is practically with- material alteration. Despite the depression which has prevailed in Scottish oil industries the output of oil shale was larger in 1891 in 1890.

addition to the general summary of the mineral products of the ted Kingdom, the returns contain tabulated details of the pro- ion of the various minerals mentioned in the foregoing, from which ull the following figures:—

he highest price paid for best selected British copper during the 1891 was £61. per ton while the lowest price was £48. 10s., the n price for the year being £56. 11s. 2d., while the corres- ding price for foreign copper (Chili bars) was £51. 12s. 8d. Some resting figures as to the amount of burnt cupreous iron pyrites, ch have been treated by the various mineral extraction works in at Britain, are furnished by Mr. T. W. Bird, of Liverpool. The l amount treated in 1891 was 391,288 tons, the estimated yield ig 1,800 ounces of gold 313,030 ounces of silver, and 14,106 tons opper.

n interesting table showing the amount of manganese ore imported the United Kingdom from sources other than those already ntioned we give below and is as follows:—

TABLE II.

MANGANESE ORE IMPORTED INTO THE UNITED KINGDOM.

Country from which imported.	1891.	
	Quantity.	Value
	Tons	£
Australasia	2,062	5,429
British North America	—	—
Russia	48,807	157,730
Sweden	3,377	10,210
Belgium	—	—
France	1,434	3,686
Italy	10	30
Portugal	3,105	10,366
Spain	2,138	6,067
Turkey	670	2,817
United States of America	286	858
Chili	34,331	112,526
Other Countries	5,229	15,726
Totals	101,449	325,445

The imports of phosphate of lime, although considerably less than in 0, are perhaps of sufficient importance to likewise warrant the roduction of the following table:—

TABLE III.

IMPORTS OF PHOSPHATE OF LIME.

Country from which imported.	1891.	
	Quantity.	Value.
	Tons	£
Belgium	70,723	106,849
France	18,325	52,418
Portugal	320	770
United States of America	132,084	353,183
Dutch West India Islands	8,851	30,077
British North America	15,918	54,235
British West India Islands	1,960	5,945
Other Countries	8,591	24,918
Totals	256,772	628,395

Seeing the discussion which the disposal of our salt supplies has raised during the past year, it will doubtless be of interest to our readers to learn which countries form the principal markets for this product, and in the following table a list of the countries to which rock and white salt were exported from the United Kingdom in 1891 will be found:—

TABLE IV.

QUANTITY AND VALUE OF SALT (ROCK AND WHITE) EXPORTED FROM THE UNITED KINGDOM.

Country to which exported.	1891.	
	Quantity.	Value.
	Tons	£
Russia	12,146	6,719
Sweden and Norway	24,041	14,308
Denmark	33,194	15,256
Germany	25,672	15,178
Holland	18,338	5,476
Belgium	31,547	22,327
West Coast of Africa	36,820	46,101
British East Indies	240,923	201,482
Australasia	54,383	74,129
British North America	70,337	53,594
United States of America	97,348	108,157
British West Indies	4,755	7,412
Foreign West Indies	25	146
Chili	5,442	5,034
Brazil	6,858	6,505
Other Countries	9,456	14,584
Totals	671,285	596,408

In addition to the statistics for the United Kingdom alone, seeing large quantities of various minerals are imported from abroad, we give the following abstract of the summary of the output of minerals and metals produced in the British colonies and possessions for the year 1890 which is as follows:—

TABLE V.

PRODUCTION OF MINERALS AND CERTAIN METALS IN THE BRITISH COLONIES AND POSSESSIONS.

ABSTRACT OF GENERAL SUMMARY.

Description of mineral.	1890.		
	Quantity.		Value.
			£
Asbestos	Tons	7,184	213,687
Barytes	,,	1,644	1,550
Coal, including some coke	,,	9,186,465	3,743,143
Gold ore	,,	72	457
	Packages	819	1,574
Gypsum	Tons	341,549	41,315
Lignite	,,	9,857	2,500
Manganese ore	,,	4,536	15.060
Mica	Lbs.	—	23,801
Ochre	Tons	11,357	219
Oil Shale	,,	56,010	104,103
Petroleum	Gallons	4,931,093	26,084
	Barrels	765,029	185,493
Phosphate of lime	Tons	32,320	91,013
Platinum	Ounces	1,000	925
Pyrites	Tons	45,622	40,353
Salt	,,	1,087,808	451,542

In conclusion, we regret that owing to our available space being limited, we can only give an abstract of the returns, but should any of our readers desire further information they may obtain it by applying to Messrs. Eyre & Spottiswoode, of London, from whom copies of the official statistics may be obtained.

THE DECOMPOSITION OF SILICIOUS EARTH.—Some experiments have recently been carried out to ascertain what action lime has on the silicates contained in the soil, which are not decomposed by acid. According to Mr. G. Marneffe, the lime decomposes the silicates, liberating the combined potash. Acting upon a silicious earth, previously exhausted with hydrochloric acid and ignited, he found in samples kept in zinc vessels for five months, and constantly watered, that the amount of soluble potash was as large again in the samples to which five per cent. of lime had been added, as it was in samples treated in a precisely similar manner, with the exception of the addition of the lime. Similar results were obtained with plaster of Paris.

Official Memoranda.

From the Board of Trade Journal.

INDUSTRIAL ENTERPRISE IN JAPAN.

MATCH MAKING.

OF all the industries instituted in Japan in imitation of those existing abroad, the match industry has been the most successful. The first match factory was established in 1876, and four years later the demand for foreign matches decreased considerably and Japanese matches were exported to the value of £58,532. Carelessness on the part of the manufacturers led during the next few years to a sudden decline in the demand; but in 1886 the industry recovered itself, the export of matches in that year amounting in value to £63,000. Since then, the production of Japanese matches has increased every year, and although prices have fallen considerably, the industry is in a flourishing condition, the export of matches during the year 1890 amounting in value to £235,761.; the total quantity manufactured in the same year was 4,101,000 gross, being an increase of 688,640 gross over the production of the year preceding.

The chief seats of the match industry are the towns of Tokio, Osaka, and Hiogo, more especially the two latter, which contain nearly 60 of the 70 odd factories now in existence.

These factories are all carried on as private undertakings, and not as companies, and they enjoy no official support.

SOAP MAKING.

There are, it appears from Mr. Lay's report, 17 soap factories in Osaka and one in Hiogo. The amount of soap produced in the Hiogo factory in the year 1890 was 77,160 boxes; of this amount only 14,249 boxes were consumed in the country, the remainder being exported to China. The value of the soap manufactured in the Osaka factories in the same year amounted to £15,000., half of the quantity made being exported also to China. Most of the factories in question are small establishments conducting operations on a very limited scale.

The cost of labour is very moderate, unskilled men being paid at the rate of 10½d. a day to 1s. 0¼d. a day, and women 4d. a day to 6¼d. a day.

CEMENT MAKING.

The chief Portland cement works in Japan are—

Asano's Cement Works, Fukagawa, Tokio; the Suzuki Cement Company, Onagigawa, Tokio; the Atsuta Cement Company, Atsuta, near Nagoya; the Osaka Cement Company, Osaka; the Onoda Cement Company, Yamaguchi, near Shimonoseki; the Nippon Cement Company, Yatsushiro, on the Hiogo coast.

There are some minor works, such as the Mikawa Cement Company in the province of Mikawa, another in Jô-hin; and I understand that the Kawaguchi (Osaka) Works, which have been suspended for a time, are likely to be soon started again. All of these, however, are of small capacity.

There is no chalk formation in the country, and the general practice is to use ordinary slaked lime (hydrate of lime), mostly prepared at works in Nimo, Yashin, Iyo, and Tosa. To this is added the necessary proportion of clay, usually in the form of river mud. The materials are mixed and churned together with a large quantity of water by apparatus working in tanks for the purpose; the fluid "slip," from which after being strained is passed into settling-ponds or "backs" of the ordinary kind. The "slurry" there deposited is cut into lumps and dried on drying-floors heated by means of flues. Calcining is carried out in kilns of the intermittent type, the fuel generally used being anthracite coal. The "clinker" after sorting is ground under pairs of revolving grindstones, usually about six feet in diameter and a foot thick; and the ground cement is then sifted through rotating gauze-covered sifters, after which it is exposed to cool, and finally packed for sale in casks or bags. The mixing, grinding, and sifting apparatus are driven by steam machinery. One day per month is usually given to cleaning and repairs. At the Osaka Cement Company's works the simple methods above outlined have been somewhat improved upon lately in certain respects. The clay in a dry state (from beds near Akashi) is pounded in steam-driven stamping mills; and both the lime and the powdered clay are well sifted before being mixed together (without water) in rotating iron vessels fitted with distributors. The powder mixture is then passed into brick tanks, where it is wetted with only a moderate quantity of water, and left 24 hours to settle, after which the slurry is beaten by hand into iron moulds, and turned out in the form of bricks of about 240 cubic inches, which are partly dried in air before being passed to the heated drying floors.

At the Onoda works, in addition to six kilns and accessories for manufacture by the process indicated above, an extensive imported German plant designed to make about 600 tons of cement per month, by a more modern process, was brought into work some three years ago (1889). In this process limestone and clay, both supplied from beds in convenient proximity to the works, are crushed and finely ground by steam-driven machinery, and after mixture are wetted with enough water for moulding into large bricks, which are dried in air and then calcined in a "Hoffmann modified" kiln. The machinery throughout is of good class, and sifting is here done on a better system than at any of the other factories. I understand that a good cement is now being turned out by this new plant, but I do not know whether the full capacity has yet been developed.

At Yatsushiro the lime is prepared on the premises from excellent limestone, an almost boundless supply of which exists in a group of islets, the property of the company, only two or three miles from the works. The clay is alluvial, taken from the foreshore near at hand, which is the estuary of the Kumagawa.

General Palmer further observes:—

"The ordinary working capacity of the several factories may be stated approximately as follows:—

Asano's Works (Tokio), 12,000 tons; Suzuki Cement Company (Tokio), 6,000 tons; Atsuta Cement Company (Nagova), 7,000 tons; Osaka Cement Company (Waka), 4,000 tons; Onoda Cement Company (Yamaguchi), 3,600 tons; Nippon Cement Company (Yatsushiro), 13,400 tons.

"The quality of the product turned out at the different works is various. Analysis has established that the ingredients and the proportions in which they are used are generally satisfactory; but the details of manufacture and the experience and care bestowed upon it are not yet in all cases quite so satisfactory, though there has certainly been a marked improvement of late in the latter respect.

"Japanese manufacturers have now realised the importance not only of technical knowledge and suitable appliances, but also of ceaseless care, and of aiming especially at uniformity of quality, the lack of which gave the earlier-made Japan cements the doubtful reputation from which they are only now emerging. Engineers and chemists have been sent to the factories of England and Germany to master the secrets of the craft; and the knowledge thus gained, together with the incentives created by a steadily-growing demand, and a fair amount of competition have already had a beneficial effect on the manufacture generally. Grinding and sifting in particular have been very greatly improved; but in burning there is doubtless something yet to be learned, which only long experience can bring. On the whole there is good warrant for believing that the best Japan-made cements, if not quite equal in quality to the best European products may be trusted, under proper safeguards, for all engineering purposes.

GLASS MANUFACTURING.

The manufacture of glass is one of the oldest of the foreign industries in Japan, and has been carried on on a comparatively extensive scale. Mr. Lay's report enumerates nine glass factories in Osaka alone, which represent a total capital of £35,167., and employ 287 workmen. Glass produced in these works was exported in 1890 to the value of £11,000.; of this 80 per cent. went to China proper, 15 per cent. to Hong Kong, and a small quantity to Vladivostock and San Francisco.

Glass is also manufactured in Nagasaki.

By far the largest glass factory in Japan is that in Tokio, owned by the Shinagawa Glass Company.

The glass produced in all Japanese factories is, on the whole, of a coarse description. This is probably in part due to the fact that the demand is principally, if not entirely, for a low-priced article. It may be doubted, however, whether the Japanese glass-blowers have yet attained the skill necessary to produce the finer kinds of glassware. In any case, so far as the manufacture of window-glass is concerned, the industry has not been a success. It has been found that the foreign article is cheaper and of a quality superior to that made in Japan, and the Customs returns show that the value of the importations of glassware in 1890—and this item is made up chiefly of window-glass—was double that of the importations of the same commodity in 1884.

BRICK MAKING.

Bricks are extensively manufactured in Japan. The following details respecting three establishments for their manufacture are given in the reports under consideration.

It appears from Mr. Layard's report that there are two brick factories in the Kanagawa prefecture, the Yokohama brick factory, situated in Yokohama itself, which is owned by a company, and another privately-owned factory situated at a village in the neighbourhood of that port. The bricks are made for home consumption, but a small quantity has been exported as a venture to Vancouver, and should the demand there justify further exportation, bricks could be shipped thither as ballast at nominal rates. Mr. Layard mentions that the wages paid at the largest of these factories range from 9½d. to 1s. 1d. per day for men, and from 4½d. to 7½d. per day for women. The number of workpeople employed at the Yokohama varies from 150 to 20, most of whom are men.

The third factory of which mention is made is situated in Nagasaki, and is owned by a company, most of the shares of which, however, are held by local capitalists. It was established, according to Mr.

ster's report, in 1888, with a capital of 10,000 dol. (£1,503.), and loys 130 workpeople.

ELECTRICAL APPLIANCES.

Ir. Layard also mentions in his report works for the manufacturing lectric light appliances, two of which are in Tokio and the third in ohama. All of these establishments, it appears, manufacture lated copper wire, silk-covered wire, and incandescent lamps, etc., articles made are, on the whole, of very inferior quality, but in ıy cases their cheapness enables them to compete successfully with tric light apparatus imported from abroad. Dynamos are still ort:d from America, all attempts to manufacture them on the spot ing failed.

t will be seen from this report that Japan has been making great rts to introduce foreign industries, and that her efforts have been nded by no small measure of success. In the case of some of these astries she is now self-supporting, foreign competition being no ger possible; in others so much has been accomplished, as to render ertain that the time is not far off when importation will altogether se. A state of affairs which is foreshaddowed by the fact that phuric acid, bleaching powder, and caustic soda are now all made in an, whereas formerly the country was solely dependent on Europe these commodities.

NOTICE.

LONDON AGENTS.

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ANSWERS TO CORRESPONDENTS.

N. W.—Your matter to hand, for which we thank you.

C. C.—We are obliged to you for putting the matter into the hands of the new secretary. We only addressed you on the matter, since we thought you would be better able from your past experience to give the matter your consideration before passing it on to the proper source.

& Co.—We shall be pleased to meet your proposal.

Bros.—We much regret that owing to the great pressure on our space this week the article which we intend to give on your communication has unavoidably been crowded out.

SEWAGE TREATMENT.

To the Editor of the Chemical Trade Journal.

DEAR SIR,—I have read the letter published in your last issue from . W. Naylor, but I think this gentleman has somewhat misinterted the remarks you were good enough to publish, commenting upon recent prosecutions here. It being admittedly illegal to run waste d into the sewers, the offence is neither greater nor less if committed a chemical manufacturer, but I think I am right in presuming that reason you expressed sympathy for me was that the evidence wed in my case that the Corporation admitted that I had in the regate done more than the law required, and that, therefore, the ding of three bad samples among the enormous number of tests made ring three months (samples being taken hourly), was not sufficient und for instituting a prosecution. I presume your correspondent did t hear the evidence given in Court and the admissions of the Corporan officials, or he would hardly have suggested that "the worst cases not galvanisers, but firms who treat the waste pickle."

If I am to take this as in any way directed against myself, I should e to know how Mr. Naylor reconciles such a suggestion, with the idence given and accepted, that I had used sufficient lime to actually der my effluent on the whole slightly alkaline. For his information, ay say that my effluent *is* flowing continually and regularly, each d every day, being pumped through steam filter presses, and, there-e, it is quite incorrect to say that it is impracticable.

I fully appreciate the difficulties of the Corporation, but they should careful to put the blame for such wrong-doing as there may be on right shoulders.

I am, etc.,

June 20th, 1892. ADOLPHE CROSBIE.

To the Editor of the Chemical Trade Journal.

SIR,—I read with disappointment the leaders referred to by your correspondent, Mr. Naylor, on account of their displaying such a want of knowledge as to the facts and circumstances of the case; but I am much more surprised at Mr. Naylor's letter, for he certainly has been in a position as works manager here to appreciate matters more accurately than he appears to do. In the first place he should know that *free* acid does not reach the sewage works; that the salt of iron is chloride, not sulphate; and that its quantity is often many times over what he states. It is quite true that the worst offenders now are not the galvanizers themselves, but those who take the "pickle," and are supposed to treat it for their own benefit, but they have to take all that is made, and I fear it has been more convenient at times to get rid of some of it by means of the sewer instead of other treatment, although I conscientiously believe what I stated in the witness-box, that Mr. Crosbie had not wilfully run away any untreated, but had been victimized by his men. The other firm, I believe too, will now do better. They took a business of which they knew nothing, and therefore some little leniency may be extended to them; but the authorities were obliged to move as things were very serious, and the time had arrived for stopping this nuisance, without at any rate seriously interfering with one of the important staple industries of the town, which to my knowledge has always had the most careful consideration at the hands of the authorities.

The pressure so tenderly applied to the manufacturer from time to time has in some instances worked a benefit to them by causing the production of a marketable article, instead of an expensive waste.

Had all the circumstances been known to you, Mr. Editor, your remarks would have been severe towards the defendants, instead of, at any rate, intimating that the authorities were misguided by ignoramuses of officials.

I hardly know whether I should have troubled to write this note except that I could not allow the last portion of Mr. Naylor's letter, relative to the mud to go unchallenged, especially as he mentions the "County" Analyst (why not in this case say the "Borough"?), and that what he says may be attributed to me, viz., that our pressed mud is practically valueless because of 5-6 per cent. of inert oxides of iron. This is absurd, and Mr. Naylor ought to know it. His other statements as to the mud are equally misleading. The mud as a fact is now being appreciated by the farmers, and the stock is not materially increasing. I mean we have not above a month's make or so more that we had this time last year, and the demand is increasing. Let me warn Mr. Naylor to be careful, for his own sake, how he provokes remarks relative to the working of our sewage works.

Yours, etc.,
E. W. T. JONES,
Public Analyst for Wolverhampton.

Trade Notes.

THE CHEMICAL INDUSTRY IN JAPAN.—According to the British Consular reports, Japan now supplies herself with sulphuric acid, caustic soda and bleaching powder, commodities for which she formerly depended upon Europe.

ST. HELENS GAS.—At a recent meeting of the St. Helens gas and lighting committee, it was reported that there was an increased consumption of about 380,000 cubic feet of gas, as compared with the same month last year. The average candle power was 18·54 sperm candles, being virtually the same as in the preceding year.

THE TRINIDAD CUSTOMS TARIFF.—Amongst the numerous articles which are exempt from duty under the new customs tariffs of Trinidad, the following are a few which may be useful to those connected with the chemical trade to be acquainted with. Fertilizers, either natural or artificial, are admitted free of duty, also quicksilver, rosin, tar, pitch, turpentine, salt, sulphur, and varnish without spirit, zinc, tin, lead in sheets, asbestos, and tar paper for roofing.

MESSRS. WOODHOUSE AND RAWSON UNITED.—The above-named firm has now opened a fully-constituted branch of their business for the Midlands at the Minories, Birmingham, and have taken over the show-rooms there, recently occupied by the Midland Electricity Company, together with the supply trade of that firm, which latter will in future devote itself exclusively to the engineering and constructing departments.

Obituary.—We regret to note the death of Mr. Rogers, manager of the Llanelly Lead and Silver Works, whilst engaged in experimenting upon some alloys of lead and silver, by dissolving them in commercial hydrochloric acid and zinc. The experiments were conducted on a large scale. Owing to the presence of arsenic, it appears that arseniuretted hydrogen was given off, Mr. Rogers inhaling the fumes to such an extent that he was taken ill and died about a week after the event.

American Trade with Guatemala.—The American President has issued a proclamation announcing the completion of the reciprocity arrangements with Guatemala, as the outcome of which the following articles will be admitted free of duty into Guatemalan ports on importation from the United States: tar, pitch, rosin, turpentine, asphalt, cottonseed oil and other products of said seed, quicksilver, guano and other fertilisers, lime, cement, and glass for roofing.

Market Reports.

TAR AND AMMONIA PRODUCTS.

Benzol is steadier and prices may be quoted as 1s. 8½d. to 1s. 9d. for 90%, though it is believed that only limited quantities could be bought at this price. Any order of consequence would send up the market immediately, the production having considerably decreased with the advent of low prices. Steadiness also reigns in 50-90's which is nominally 1s. 4d., but the remarks on 90's apply equally to 50-90's. In anthracene, there is no change, 30% A being 10d. and 30% B 7½d. Pitch is firm, whilst other products remain still under a cloud.

In sulphate of ammonia there is a much better feeling, and buyers seem to have more confidence in the market. This combined with the small quantity offering ought to cause some recovery in prices, which it is admitted on all sides are unnecessarily low. There is as yet no change in quotations, which remain generally at £9 15s. at all ports, although in many instances sulphate is now held for more money Beckton is nominally £10. 2s 6d while outside London makes have changed hands at £9. 17s. 6d. Nitrate is again firmer, 8s. 1½d. to 8s 3d. being now asked.

REPORT ON MANURE MATERIAL.

There has been more business doing and prices tend to harden for both phosphatic and nitrogenous material.

For 75/80% Florida phosphate rock, 9½d. per unit now generally asked for cargoes to U.K., but 9d. would probably still be business. Peace River rock, hot-air dried, offers freely at 7½d. per unit and rather hangs fire at the price. Sales of South Carolina hot-air dried River rock are reported under 7¼d., and Sand rock can be bought at 7d. per unit, in cargoes c.i.f. to U.K. We do not hear of any business in Canadian. Continental descriptions unchanged.

Nothing reported in cargoes of River Plate bones, shippers refusing to offer at anything like prices recently current, and buyers being in no hurry to cover requirements at advanced prices. Crushed Kurrachee bones offer at £4. 5s., ex quay Liverpool, for shipment, and this price would probably do for fair average quality Bombay bone meal, for shipment. On spot 200 tons of inferior quality crushed Calcutta bones sold at £3 15s. 6d., ex store; and 200 tons of fine East India bone meal at £4. 5s. £4. 1s. 3d. to £4. 2s 6d., ex quay Liverpool, paid for 50 tons Madras bones, for charcoal purposes, and this about the value of good clean Brazils and Spanish.

Nitrate of soda is firmer in all positions. On spot ordinay agricultural quality is advanced 8s. 1½d., and good to refined to 8s. 3d. to 8s. 4½d. per cwt. 8s. 3d. now required for due cargoes, 8s 1½d. repeatedly bid and refused. May June shipments are worth fully 8s 6d.

40 tons River Plate dried blood, arrived Liverpool, sold to arrive it is understood at about 8s. 6d. per unit.

THE METAL MARKETS.

LONDON, Wednesday.—Pig iron firm: Scotch warrants closed at 41s. 4d. cash. Middlesbrough, 40s. 11d. cash, and Hematite 49s. 11d. cash. Copper rather better: Chili bars, G.O.B.'s and G.M.B.'s closed at £45. 5s. cash, and £45. 10s. to £45. 17s. 6d. three months. Tin firmer: Straits closed at £99. 15s. to £98. 5s. cash, and £98. 5s. to £98. 15s. three months. Australian, £100. cash. English ingots, £103. Lead easy: Spanish, £10. 10s. to £10. 11s. 3d.; English, £10. 15s. to £10 17s. 6d. Silesian spelter, ordinary, £21. 15s to £22. Quicksilver, first hands, £7. 2s. 6d.; second hands, £6. 19s. Copper shares weak: Cape, 1⅞ to 1⅞; Copiapo, 2⅛ to 2⅜; Libiola, 2¾ to 3; Mason and Barry, 4 to 4⅛; Rio Tinto, 16⅜ to 16½; Tharsis, 4⅞ to 5; Namaqua, ¾ to 1; Panulcillo, ⅜ to ½.

GLASGOW, Wednesday.—Market steady, with moderate business. Scotch done at 41s. 2½d. cash, also at 41s. 4½d.; 41s. 4d, and 41s. 4½d. one month; closing with buyers at 41s. 2½d. cash, sellers ask 41s. 3½d. Middlesbrough done at 41s. cash, closing with buyers at 40s. 11d. cash; sellers ask 41s. 1½d. Hematite closes with buyers at 49s. 10½d., sellers ask 50s. 1½d.

WOLVERHAMPTON, Wednesday.—There was only a quiet market this afternoon, attention being engrossed by the election prospects. The quarterly meeting is fixed for July 13 here, and the next day in Birmingham. Fair demand for both crude and finished iron, and quotations maintained. West coast forge hematites delivered were quoted 59s., Lincolnshires 47s., Northamptons 44s., Derbyshires, 43s. The output of Midland sorts is still within the demand. Staffordshire, all-mine hot blast, 62s. 6d.; galvanized corrugated sheets, 24s.; guage, £11. 5s. to £11. 10s.; marked bars, £8.

MISCELLANEOUS CHEMICAL MARKET.

There is a continued steady demand for all the ordinary products of the alkali trade, and prices are sustained throughout. Bleaching powder is moving off freely at £7. 10s., f.o.r. makers' works. Soda ash is well sold in many grades of Leblanc makes, and Solvay ash is steady in price within the limits of 1⅝d. to 1¾d. per degree f.o.b. Caustic soda is unchanged in value, viz.:—77%, f.o.b. Tyne, £11. 15s.; f.o.b. Liverpool, 74%, £11. 5s.; 70%, £10. 5s., 60%, £9. 2s. 6d; cream, 60%, £8. 17s. 6d. all 10 ton lots. Soda crystals £3. to £3. 5s. per ton, according to package. Chlorate of potash 6¾d. to 7d. per lb. for prompt and forward delivery respectively. Chlorate of soda 8d. per lb. Recovered sulphur is somewhat firmer, and lowest price on rails is £5. per ton, makers' works. Sicilian sulphur is reported dearer. Vitriol is nominally without change. The demand for muriatic acid is sufficient to take off the ordinary supply. Sulphate of copper is still slow to move, and prices range from £15. to £15s. 10s. at usual points. Acetates of lime are, if anything, quieter, but without material change in price. Acetic acid and acetates are generally quiet. White arsenic is steady at £11. 15s. per ton for spot delivery. Potash, caustic, and carbonate, are in good demand, and prices are well maintained. Bichromates of potash and soda, respectively, 4½d. and 3¾d per lbs. Sulphocyanides quiet.

LIVERPOOL OIL AND COLOUR MARKET.

LIVERPOOL, Wednesday.

OILS: Palm oil has been very quiet and sales few, a concession in price has attended those which have been made, including Lagos £19. 10s. and Benin £19. 2s. 6d. per ton both transit. Olive has been brisker during the early part of the week though actual prices have not transpired. To-day it is steady, but business is limited. Linseed has improved, the price now asked being 20s. 3d. to 20s. 6d. per cwt. in export casks, at which price it is steady. Cottonseed: There has been a further advance in Liverpool refined it now being steady at 19s. 9d. American continues at 20s. per cwt. Castor oil is firmer for both good seconds Calcutta and first pressure French, the former being sold at 2⅝d., though the latter is still quoted 2¾d. per lb. Tallow is steady with a medium enquiry for good qualities at 25s. to 25s. 6d., other grades dull. Resin, common, continues at 4s. 1½d. with the market quiet but steady. Spirits of turpentine have ruled nearly all the week at 23s. 9d. advancing once to 24s. 3d., to-day's price is 23s. 3d. to 23s. 9d. per cwt. on spot. Petroleum: American 5¼d. to 6¼d. according to quality, Russian refined 4½d. per gallon.

COLOURS.—Prices continue unchanged. Ochres: Oxfordshire, common, £10., medium, £12., best, £15.; Derbyshire, common, 40s., medium, 50s., best, 60s. Welsh, best, 70s., seconds, 50s., and common, 18s.; Irish, Devonshire, 40s. to 45s.; French, J.C., 55s. to 60s.; M.C., 65s. to 67s. 6d. Umber: Turkish quiet. Devonshire, 50s. to 55s. White lead, red lead, and oxide of zinc unchanged. Venetian red, £6. 10s. to £10. Cobalt: Prepared oxide, 10s. 6d.; black, 9s. 9d.; blue, 6s. 6d. Zaffres: No. 1, 3s. 6d.; No. 2, 2s. 6d. Oxide of iron: common, £6.; medium, £10.; finest, £20.

THE LIVERPOOL MINERAL MARKET.

The market has maintained the firmness reported last week. Manganese: The arrivals this week are nil. Stocks still continue to be reduced, and prices are firm. Borate, 7d. per lb.; sulphate, £21. 10s.; oxalate, 1s. 6d. per lb.; chloride, £15.; carbonate, £12. 10s., steady. Magnesite: Raw lump very flat. Raw ground £6. 10s., and calcined £12. 10s. Bauxite (Irish Hill brand) continues in brisk demand at full figures; lump 20s., seconds 16s., and thirds 12s. French chalk: Arrivals this week continue small. A good business, however, has been done at full figures. "Angel White" brand and "Silvery," 90s. to 92s. 6d.; prime quality, 90s. to 95s.; and superfine, 105s. Barytes: Carbonate, best lump scarce at 90s. to 95s.; nuts, 70s. to 80s.; whilst finest white sulphate is steady. "Angel White," No. 1, 70s.; No. 2, 60s. to 65s.; No. 3,

Pumice stone steady. Iron ore steady; Bilbao shipments ered; Irish and Cumberland easier. Santander and man-rous, there is more doing. Emerystone: The demand continues est brands. No. 1 lump, £5. 10s. to £6.; smalls, £5. to 10s. Fullers' earth quiet; best lump, 55s.; fine impalpable id, £7.; "Emerald" ground, 80s. Scheelite, wolfram, tungstate oda, and tungsten metal firm and unaltered. Chrome ore: High s in good demand at full prices. Antimony ore and metal prices firmer. Asbestos very firm. Potters' lead ore, smalls, 10s. to £11. 10s. Calamine quiet. Strontia sulphate (celestine) . Limespar is steady, especially for English manufactured; old B. brand in demand at 50s. (ground). Felspar quiet. Fluorspar: quality scarce. Ferro-manganese steady, 75%, £12.; 85%, 15s. Plumbago brisk. Spanish, £5.; best Ceylon lump at last ations; Italian and Bohemian, £4. to £12. per ton. "Founders," o £6.; Blackwell's "Mineraline," £10. French sand, 20s. to 6d. Ground mica, £45. to £50. China clay steady; common, 6d.; good medium, 22s. 6d. to 25s; best, 30s. to 35s. (at corn). Bog ore (oxide of iron) steady; finest quality 22s. to 23s.

TYNE CHEMICAL REPORT.

TUESDAY.

emicals remain unaltered, with a fair demand. Bleaching powder inues very scarce, and there is more business doing in caustic soda. ching powder, softs, £7. 10s. and £7. 12s. 6d. per ton, hards, 17s. 6d. per ton; caustic soda, 76/77%, £11. 15s. per ton, 70%, 5s. per ton; recovered sulphur, 2 cwt. bags, £5. 5s. per ton; ash, 48%, £5. 8s. 9d. per ton, 52%, £5. 17s. 9d. per ton, 56%, 6s. 9d. per ton; alkali, 36%, £4. 18s. 6d. per ton; white alkali, £6. 10s. per ton, 50%. £6. 15s. 6d. per ton, 52%, £7. per ton; sulphite of soda, in 5-7 cwt. casks, £7. per ton, in 10 ton lots, ditto cwt. kegs, £7. 15s. per ton, in 10 ton lots; silicate of soda, 75° Tw. per ton, 100° Tw. £4. per ton, 140° Tw. £4. 7s. 6d. per ton; soda als, in casks, £2. 17s. 6d. per ton gross weight, in 2 cwt. bags, 17s. 6d. per ton nett weight; chlorate of potash, 7d. per lb. 5%; pearl hardening, £3. 10s. per ton nett; pure white sulphate of ina, £4. 10s. per ton; blanc fixe, £7. 10s. per ton; chloride of im, £7. 10s. per ton; nitrate of baryta crystals, £19. per ton; te of baryta, ground, £19. 10s. per ton; sulphide of barium, per ton; carbonate of alumina, £28. 10s. per ton; aluminate oda, £33. 10s. per ton; hydrate of barium, £11. per ton.

outh Durham salt quiet at 10s. to 10s. 6d. per ton f.o.b. Tees, nett. als: Supplies are more plentiful and lower prices prevail. Prices bout 10s. 6d. per ton for best Northumbrian steam, 4s. 9d. per or small steam, 9s. per ton for gas coals. Coke: Still rather e, at 17s. to 18s. per ton. Manufacturing coal may be quoted at d. to 5s. 6d. per ton, at works on Tyne, according to quality.

WEST OF SCOTLAND CHEMICALS.

GLASGOW, TUESDAY.

o far as the common chemicals are concerned no new features arise, the market remains quiet, prices showing little or no change.

alphate of ammonia has at least made no further retrogression, and price stands at not less than £9. 13s. 9d. prompt with some holders sing to sell under £9. 15s. It does not appear to have been done ny case below £9. 13s. 9d., although last week a suspicion of 12s. 6d. was afoot. The forward market has perhaps gained a e; £10. 2s. 6d. was in one case (special, however) fixed, but short veries fetch from 5s. to 7s. 6d. less.

he paraffin section has been the most affected of all, and strong rt has been made to reconcile the scale consumers, so that con-ption may be resumed, but as yet without the crowning success. gress has been made, however, and the matter will most likely be led this week, probably by the concession of a fractional drop (in e and wax) from the prices as now standing. The Scotch makers e had to reduce lubricating oils in consequence of the recent serious erican drop of 30s. per ton. The Scotchmen don't as yet fall respondingly (see figures below) but feel their way with a drop of n 10s. to 20s. It is felt, however, that they will be forced to submit heavier shrinkage than this, if not to the extent of the full 30s.

hief prices current are:—Soda crystals, £2. 17s. 6d., nett Tyne; m in lump, £5. 10s., nett Glasgow; soda ash, 1⅜d., less 1½% e; caustic soda, white, 74°, £11. 5s., 70/72°, £10. 5s., 60/62°, 2s. 6d., and cream, 60/62°, £8. 17s. 6d., all nett Liverpool; rbonate of soda, 5 cwt. casks £6. 7s. 6d. and 1 cwt. cask £6. 15s., Liverpool; refined alkali, 1⅜d., less 2½% Tyne; bleaching powder, £7. 10s. nett Tyne; saltcake, 36s. 6d.; borax, English refined, £29. 10s. and boracic acid, £37. nett Glasgow; bichromate of potash, 4½d. nett, for Scotch and English deliveries (for export 4¼d. nett f.o.b. Glasgow); bichromate of soda, 3¾d., nett, for Scotch and English deliveries (for export 3½d. nett f.o.b. Glasgow); chlorate of potash, 6¾d., less 5% any port; nitrate of soda, 8s. 1½d.; sulphate of ammonia, £9. 13s. 9d. to £9. 15s. f.o.b. Leith; salammoniac, first and second white, £35. and £33., less 2½% any port; sulphate of copper, £15. 10s., less 5% Liverpool; paraffin scale (hard), 2½d., and soft 2 5/16d. to 3d. per lb.; paraffin wax, 120°, semi-refined, 3⅜d. to 4d.; paraffin spirit (naphtha), 6d. a gallon; paraffin oil (burning) 5d., 5¼d. and 5½d. according to kind, at works, for Scotch buyers (English and Irish sales about 1d. lower); ditto (lubricating), 865°, £3. 5s. to £3. 15s., 885°, £4. 10s. to £6., and 890/895°, £5. to £7. Week's imports of raw sugar at Greenock were 26,632 bags and 103,819 mats.

New Companies.

MORRIS AND GRIFFIN, LIMITED.—Registered with a capital of £40,000., in £1. shares, to carry into effect an agreement, made May 16, between W. M. Fuller, of the one part, and W. F. Bentley, of the other part, for the acquisition of the undertaking of chemical-manure, etc., manufacturers, now carried on by Morris and Griffin, at Newport, Monmouth, and to develop and extend the same.

CAMBRIDGE GLAZED BRICK AND CEMENT CO., LIMITED.—This company was registered on the 8th inst., with a capital of £20,000., in £1. shares, to carry into effect an agreement dated June 2, 1892, between Mr. A. W. Fludder of the one part, and Mr. G. Saies (for the company) of the other part, for the acquisition of the business of Messrs. Canning and Co., and to carry on the business of manufacturers of and dealers in cement, lime, plaster of Paris, etc., brick and tile makers, artificial stone makers, etc. The subscribers are:—

	Shares.
J. A. Wootton, Castle-street, Cambridge, brewer	1
J. Queen, 27, Queen-street, Cambridge, coal merchant	1
C. W. Crawley, 68, Mill-road, Cambridge, merchant	1
J. Chester, 5, Alexandra-street, Cambridge, accountant	1
A. W. Fludder, Sheeford, Cambs, brick maker	1
E. Peyton, 11, Bonamy-street, St. James-road, Bermondsey	1
G. Brown, 19, Edward-street, Newington, S.E., clerk	1

NEW HYDROLEINE CO., LIMITED.—This company was registered on the 14th inst., with a capital of £10,000., in £1. shares, to acquire and carry on the business of hydroleine and soap powder manufacturers, carried on by the Hydroleine Co, Limited, and to enter into an agreement with Mr. O. Nettlefold, whereby the company agrees to pay him certain moneys paid by him under the terms of an agreement dated May 5, 1892, between Mr. J. H. Baker of the one part and Mr. O. Nettlefold of the other part. The subscribers are:—

	Shares.
S. Firth, 21, Upper Tichborne-street, Leicester, agent	1
W. H. Sollitt, County Asylum, Leicester, clerk	1
J. Dawson, Wells-road, Nottingham	1
W. Brown, Ashby-de-la-Zouch, inn-keeper	1
A. Petter, Ashby-de-la-Zouch, bank agent	1
R. Towle, Ashby-de-la-Zouch, clerk	1
J. W. Ingham, 76, Henry-street, Northampton	1

PONTLASH COLLIERY CO., LIMITED.—This company was registered on the 8th inst., with a capital of £6,000., in £5. shares, to carry on the business of colliery proprietors, coke manufacturers, patent fuel manufacturers, etc. The subscribers are:—

	Shares.
J. E. Lewis, Porth-street, Porth, farmer	1
J. H. Thomas, Cloth Hall, Porth, draper	1
J. H. Jones, Cardiff, solicitor	1
R. M. Evans, Pontypridd, iron merchant	1
J. Williams, Miskin Hotel, Trealaw, mining engineer	1
D. D. Davies, 11, Tudor-road, Cardiff, law accountant	1
W. C. Matthews, 10, Clare-street, Cardiff, accountant's clerk	1

The Patent List.

This list is compiled from Official sources in the Manchester Technical Laboratory, under the immediate supervision of George E. Davis and Alfred R. Davis, who report professionally upon the value of Chemical Patents.

APPLICATIONS FOR LETTERS PATENT.

Chambers for Drying Bricks, etc. J. Short. 10,717. June 7.
Improvements in Furnaces. A. Anderson. 10,728. June 7.
Obtaining Sodium, Potassium, etc., by Electricity and also Dry Ferric Chloride. H. C. Bull. 10,735. June 7.
Manufacture of Oxygen. The Manchester Oxygen Co. and W. M. Jackson 10,745. June 7.

Improved Detergents. W. P. Thompson. 10,765. June 7.
Electric Batteries. The Princess Co., Ltd. 10,777. June 7.
Hard Soap. C D. Abel. 10,784. June 7.
Portable Gas Generating Apparatus. J. M. Goldsmith. 10,806. June 7.
Making Paper Pulp from Peat. A. Brin and W. H E. Pyle. 10,812. June 7.
Cleansing Sheep's Wool from Pitch, etc A. Beyer and K. Herold. 10,834. June 8
Sterilising Fluids. R. G Ross, J. B. Hilliard, and W. Paterson. 10,836. June 8.
Humidifying Apparatus for Fibrous Substances. J. T. Pearson. 10,839. June 8.
Primary Batteries. W. Weymersch. 10,850. June 8.
Manufacture of Bay Salt. A. MacNab. 10,851. June 8.
Secondary Batteries. H. F. Kirkpatrick-Picard and H. Thame. 10,855. June 8.
Manufacture of Soap. E. Barker and E. Bannister. 10,858. June 8.
Sewage Purification. G. C. Purvis. 10,867. June 9.
Cleaning Tin Plates. T. Price. 10,985. June 9.
Producing Oxide of Zinc. W. S. Rawson and Woodhouse and Rawson United, Ltd. 10,913. June 9.
Azo-Colouring Matters. Brooke, Simpson and Spiller, Ltd. and T A. Lawson. 10,915. June 9
Primary and Secondary Batteries for Electric Lighting. W. J. Birnie. 10,932. June 9.
Hydrogen Gas for Illuminating and Heating Purposes. W. J. Birnie. 10,933. June 9.
Manufacture of Producer Gas. W. J. Hague. 10,954. June 10.
Smoke Consuming Furnaces. P. Mohler. 10,986. June 10.
Regenerative Gas Heating Apparatus. A. Higginson. 10,996. June 10.
Charging and Drawing Gas Retorts. G. Inglis. 11,019. June 10.
Dyeing and Printing with Alkaloids. W. J. S. Grawitz. 11,027. June 10.
Obtaining Carbonic Acid Gas. H. S. Elworthy. 11,034. June 10.

Gazette Notices.

PARTNERSHIPS DISSOLVED.

Davies, Rees, and Thomas, Pontwelly, coal, lime, brick, slate and [illegible] merchants.

S. Robinson, T. Sykes, and C. Bennett, under the style of Robinson, Sykes and Co., Arnold, Nottinghamshire, brick manufacturers.

J. Bagshaw and W. J. Lockhart, under the style of J. Bagshaw and Co., Claverdon, Warwickshire, coal, lime, and salt merchants.

BANKRUPTCY ACTS, 1883 and 1890.

Receiving Orders.

Marston, Frank (trading as W. P. Marston and Sons), Leeswood Vale Oil Works, near Mold oil and grease manufacturer.

Peppiatt, George, Horley, Surrey, oilman.

Thomas. Joshua James, Rhymney, chemist and druggist.

Adjudications.

Gammidge, Albert Edward, Leicester, chemist.

Marston, Frank (trading as W. B. Marston and Sons), near Mold, Flintshire, oil and grease manufacturer.

Peppiatt, George, Horley, chemist.

IMPORTS OF CHEMICAL PRODUCTS

AT

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Week ending June 11th.

Acetate of Lime—
U. States, 3,127 pkgs. H. Wallace & Co.

Acetic Acid—
Holland, 200 pkgs. Beresford & Co.
,, 38 A. & M. Zimmermann

Acetone—
Holland, 14 pkgs. A. & M. Zimmermann
,, 1 T. Palmer

Alkali—
France, 100 c. Arnati & Harrison
,, ¼ Chinnery & Co.

Alum—
Holland, 26 pkgs. C. Hoft & Co.
,, 78 Ohlenschlager Bros.

Ammonia—
France, 7 pkgs. Chinnery & Co.
Belgium, 25 C. J. Capes & Co.

Antimony—
Australia, 32 t. W. Balchin
Italy, 100 Novelli & Co.
Spain, 15 J. Bamber
N. Zealand, 17 Major & Field
Portugal, 50 J. Bamber

Arsenic—
Germany, 25 pkgs. Brandram Bros. & Co.

Asbestos—
Italy, £40 Middleton's Wf. Co.
Natal, 50 L. & I. D. Jt. Co.
Italy, 130 British Asbestos Co.

Barytes—
Belgium, 24 cks. H. Hodson & Sons
,, 23 pkgs. W. Pope & Co.
Germany, 24 ,,
France, 50 J. B. Orr & Co., Ltd.
,, 10 J. B. Orr
Belgium, 66 A. Zumbeck & Co.

Boracic Acid—
Italy, 46 pkgs. J. Puddy & Co.

Bromide of Iron—
Germany, 27 pkgs. A. & M. Zimmermann

Caoutchouc—
Germany, 2 c. W. M. Smith & Sons
Madagascar, 37 Procter Bros.
France, 10 Flageollet & Co.
Germany, 18 L. & I. D. Jt. Co.
,, 180 Kleinwort, Sons, & Co.
Madagascar, 64 E. Barber & Co.
France, 120 Arnati & Harrison
Zanzibar, 53 Anderson, Weber, & Smith
Madagascar, 62 Lewis & Peat
Singapore, 150 L. & I. D. Jt. Co.
Majunga, 50 Lewis & Peat
Madagascar, 24 L & I. D. Jt. Co.
Zanzibar, 103 Clarke & Smith
Brisbane, 7 S. Figgis & Co.

Caustic Potash—
France, 2 pkgs. Beresford & Co.
,, 41 H. Briscoe & Co.

Chemicals *(otherwise undescribed)*
Germany, 2 pkgs. Phillipps & Graves
Holland, 14 R. Morrison & Co.
Germany, 34 A. & M. Zimmermann
Holland, £36 Spies Bros. & Co.
,, 20 Phillipps & Graves
Germany, 22 pkgs. T. H. Lee

Citric Acid—
Germany, 10 pkgs. W. M. Smith & Sons

Cream of Tartar—
Canaries, 30 pkgs. G. S Bruce
Holland, 9 Middleton & Co.
France, 2 W. C. Bacon & Co.
,, 5 M. Ashby, Ltd.
,, 5 B. & F. Wf. Co., Ltd.
Spain, 22 ,,
Holland, 28 ,,
France, 3 Northcott & Sons
,, 2 Hanson, Son, & Co.
,, 2 E. W. Carling & Co.
,, 8 Ross & Deering

Dyestuffs—
Aniline
Holland, 11 pkgs. Phillipps & Graves
Argols
Italy, 32 pkgs. Thames S. T. & L. Co., Ltd.
,, 1,401 B. Jacobs & Sons
Cutch
Singapore, 467 pkgs. J. Swire & Sons
Divi Divi
Jamaica, 500 pkgs. G. T. Benton & Sons
Extracts
Belgium, 105 pkgs. L. J. Levinstein & Sons
France, 80 Prop. Chmbln.'s Wf.
Denmark, 47 A. F. White & Co.
Belgium, 195 Leach & Co.
Italy, 50 Skilbeck Bros.
Denmark, 2 Sorensen & Co.
,, 4 R. J. Fullwood & Bland
Gambier
Singapore, 859 Williams, Torrey & Co., Ltd.
,, 168 Evans & Co.
,, 731 Beresford & Co.

Indigo
E. Indies, 15 chts. F. Huth & Co.
,, 16 Ernsthausen & Co.
,, 6 Elkan & Co.
,, 40 Wallace Bros.
,, 95 L. & I. D. Jt. Co.
Myrabolams
E. Indies, 682 pkgs. J. E. Scott
Sydney, 349 Beresford & Co.
,, 234 Hoare, Wilson, & Co.
,, 268 Baxter & Hoare
,, 3,730 J. P. Alpe & Co.
,, 4,760 W. Shelcott
,, 1,705 Leach & Co.
,, 170 Lucas & Spencer's Wf., Ltd.
,, 1,350 Wallace Bros.
,, 1,000 S. Barrow & Bros., Ltd.
,, 2,717 Brown & Elmslie
,, 1,000 L. & I. D. Jt. Co.
,, 667 S. Barrow Bros.
Orchella
Belgium, 63 pkgs. Clarke & Smith
E. Indies, 63 ,,
Sumac
Italy, 14 pkgs. Blundell, Spence, & Co.
,, 350 J. Kitchin, Ltd.
Tanners' Bark
Adelaide, 119 t. Beresford & Co
Melbourne, 103 Baxter & Hoare
B. W. I., 2 S. Harris & Sons
Adelaide, 25 Devitt & Hett
Turmeric
Belgium, 92 pkgs. L. & I. D. Jt. Co.
,, 41 Clarke & Smith
,, 98 Beresford & Co.
Shanghai, 206 Melchers, Runge, & Co.
E. Indies, 41 Clarke & Smith
Valonia
A. Turkey, 286 t. A. & W. Nesbitt
,, 51 J. J. Greenstreet

Farina—
Germany, 50 pkgs. J. Knill & Co.
,, 50 C. Tennant, Sons, & Co.
Holland, 250 R. G. Hall & Co.

French Chalk—
France, £18 E. Tuteur

Gamboge—
Singapore, 7 pkgs. H. Gluck & Co.

Glucose—
Melbourne, 100 pkgs. 100 c. Trier, Mayer & Co.
U. States, 100 580 Devitt & Hett
,, 100 602 Page, Son, & East
,, 450 450 Barrett, Tagant, & Co.
U. States, 50 303 A. B. Curtis & Co.
,, 250 250 Ohlenschlager Bros.
,, 100 600 Pillow, Jones, & Co.
,, 50 393 W. Balchin
,, 400 400 Beresford & Co.
France, 200 200 J. Barber & Co.
,, 300 300 L Norman & Co.
U. States, 150 150 L. & I. D. Jt. Co.
,, 250 250 J. Knill & Co.
,, 40 222 J. Keiller & Son
,, 200 200 Fellows, Morton, & Co.
,, 2,850 4,350 R. G. Hall & Co.
,, 50 302 Williams, Torrey & Co., Ltd.
,, 400 400 Humphrey & Co.
Germany, 65 572 Prp. Chmbln.'s Wf.
,, 50 298 J. Knill & Co.
U. States, 620 2,210 Prp. Chmbln.'s Wf.
,, 745 780 B. & N. Whys. Co.
,, 1,509 4,595 L. Sutro & Co.
,, 500 500 J. Barber & Co.
,, 250 250 L. Norman & Co.
,, 1,380 3,888 Soundy & Sons
,, 25 120 Phillipps & Graves
,, 120 660 T. M. Duche & Sons
,, 500 500 Trier, Meyer, & Co.

Glycerine—
Holland, £100 G. Rahn & Co.
France, 4,520 Williams, Torrey & Co., Ltd.
Holland, 110 J. Owen
Germany, 100 T. Palmer

Guano—
Peru, 1,850 t. Anglo Contl. G. Wks.

Manganese—
N. Zealand, 98 t. James & Shakespeare
,, 124 L. & I. D. Jt. Co.
,, 124 W. A. Sparrow

Manure—
Belgium, 3 t. G. M. Bauer
France, 330 A. Hagan
Germany, 56 Union L. Co., Ltd.

Methyl Alcohol—
Holland, 100 pkgs Lister & Biggs
Belgium, 2 ,,

Mica—
Adelaide, 485 W. M. Smith & Sons
Ceylon, 48 ,,
E. Indies, 148 ,,
U. States, 80 Knight & Morris

Ochre—
France, 106 cks. W. Harrison & Co.
Holland, 16 pkgs. Phillipps & Graves

Painters' Colours—
Belgium, 12 pkgs. T. H Lee
Germany, 6 L & I. D. Jt. Co.
,, 10 Phillipps & Graves
U. States, 20 C. Turner & Son
,, 30 W. Fenton
,, 205 M. Ashby, Ltd.
Germany, 20 H. Brooks & Co.
,, 20 J. Kitchin, Ltd.
Holland, 14 R. Baelz & Co.
France, 57 C. F. Gerhardt
U. States, 50 5 cs. Magee, Taylor, & Co.
France, 7 Flageollet & Co.
,, 2 Bennett S S. Co., Ltd.
U. States, 3 Wickin, Johnson, & Co.
Germany, 19 T. H. Lee
,, 50 W. J. Pattison & Co.
Belgium, 14 T. Palmer

Paraffin Wax—
U. States, 571 brls. H. Hill & Sons
,, 2,198 J. H. Usmar & Co.
,, 50 Williams, Torrey, & Co., Ltd.
,, 5 cs. H. W. Peabody & Co.

Phosphate Rock—
Canada, 375 t. Anglo Contl. G. Wks.
Belgium, 130 Lawes Manure Co., Ltd.

Pitch—
N. Zealand, 40 brls. G. Mayer & Co.

Plumbago—
Ceylon, 70 brls. Doulton & Co.
,, 225 Beresford & Co.
,, 898 J. Thredder, Son, & Co.
Germany, 10 cks. G. Mayer & Co.
Ceylon, 40 J. Stiff & Sons
Germany, 10 A. Brorsen
Holland, 17 B. Gallaway

Potash—
France, 70 c. Petri Bros.
,, 100 F. W. Berk & Co., Ltd.
,, 18 pkgs. Weatherley, Mead, & Co.

Potassium Bromide—
U. States, 20 pkgs. Fuerst Bros.
,, 22 Corbyn, Stacey, & Co.
,, 10 Baiss Bros. & Co.

Potassium Carbonate—
France, 25 c. F. J. Putz & Co.

Potassium Oxymuriate—
Belgium, 50 pkgs. G. Boor & Co.

Potassium Sulphate—
France, 20 pkgs. Carey & Sons

Pyrites—
Spain, 1,930 t. Tennant, Sons, & Co.
,, 1,060 T. S. Whitehead & Co.
,, 800 Anderson, Anderson, & Co.
,, 928 Societe Commerciale

Resin—
U. States, 738 brls. G. Nutter & Co.
,, 300 Moore & Hole

Saltpetre—
E. Indies, 894 bgs. L. & I. D. Jt. Co.
,, 214 C. Wimble & Co.
,, 1,361 Ralli Bros.
,, 554 E. D. Sassoon & Co.

Senna—
Italy, 9 cks. W. Harrison & Co.

Sodium Hyposulphite—
Belgium, 5 pkgs. Beresford & Co.

Soapstone—
France, 200 bgs. Beresford & Co.

Sulphur—
Italy, 2 t. Union L. Co., Ltd.
Holland, 12 ,,

Tallow—
Adelaide, 206 cks. Elkan & Co.
N. Zealand, 7 Bowron Bros.
,, 63 Flack, Chandler, & Co.
,, 237 N. Z. L. & M. A. Co.
,, 2 N. M. & A. Co. of N. Z.
,, 165 Nelson Bros.
,, 8 J. Graves
Sydney, 119 A. G. Anderson
,, 115 Elkan & Co.
,, 123 Brown & Elmslie
,, 107 Goad, Rigg & Co.
,, 245 Goldsbrough, Mort, & Co.
,, 211 Anning & Cobb
N. Zealand, 8 W. E. Bott & Co.
,, 18 Dalgety & Co.
,, 21 Culverwell, Brooks, & Co
,, 52 Low, Sons. & Bedford
,, 36 W. Kemsley & Co.
,, 182 Hicks, Nash, & Co.
Queensland 100 Australian Meat Co.
,, 32 Lucas & Spencer's Wf.
,, 309 Goad, Rigg, & Co.
,, 391 Goldsbrough, Mort, & Co.
,, 20 Leach & Co.
,, 53 N. Z. L. & M. A. Co.
N. Zealand, 90 Kaul & Haenlein
Melbourne, 8 ,,
,, 306 Elkan & Co.
Tasmania, 45 Hicks, Nash & Co.
Melbourne, 1 Beresford & Co.
Sydney, 162 J. Greig
,, 45 Coml. Banking Co. of Sydney
,, 1 A. Marshall

Tartaric Acid—
France, 8 pkgs. B. & F. Wf. Co., Ltd.
Holland, 12 Middleton & Co.

Turpentine—
Spain, 458 brls. Moore & Hole
U. States, 2,694 Nickoll & Knight

Ultramarine—
Belgium, 20 cks. Heiman & Kohnstamn
Germany, 10 cs. 57 pkgs. G. Steinhoff
Holland, 12 Haeffner, Hilpert, & Co.
Belgium, 8 Leach & Co
,, 6 W. Harrison & Co.
Holland, 4 cks. Phillipps & Graves
,, 7 brls. Little & Johnson
Belgium, 24 Arnati & Co.

Varnish—
U. States, 10 pkgs. Dawson Bros.
,, 42 Pinchin, Johnson, & Co.
,, 2 Allan Bros & Co.

White Lead—
Holland, 45 cks. T. & W. Farmiloe
,, 45 Phillipps & Graves
,, 19 Burrell & Co.
Germany, 55 Randall Bros.
,, 9 Petri Bros.
,, 19 Colthurst & Harding
,, 32 F. Broome
France, 47 W. Harrison & Co.

Zinc Oxide
Holland, 180 brls. M. Ashby, Ltd.
,, 625 cks. Soundy & Sons
Germany, 35 M. Ashby, Ltd.

LIVERPOOL.

Week ending June 9th.

Ammonium Chloride—
Hamburg, 102 bgs.

Barytes—
Rotterdam, 12 cks.

Borax—
Havre, 41 brls. Cunard S S. Co., Ltd.

Chemicals *(otherwise undescribed)*
Bremerhaven, 1 cs.

Colours—
Rotterdam, 7 cs. 7 cks.

Cream of Tartar—
Barcelona, 5 cks. Sachse & Klemn
,, 3
Tarragona, 5 ,,

Disinfectants—
Hamburg, 1 cs.

Dyestuffs—
Algorobilla
Coquimbo, 30 bgs.
Aniline Colours
In transit, 60 cs.
Annatto
Bordeaux, 3 cks.
Cochineal
Canary, 12 bgs. P. R. M'Quie & Son
Divi divi
St. Nazaire, 2 sks.
Hamburg, 72 bgs.
Extracts
New York, 30 brls.
Bordeaux, 150 cks.
Ghent, 125
Fiume, 375 Taylor, Somerville, & Co.
Fustic
Laguna, 10 t. R. B. Watson & Co.
Orchella
Lisbon, 1 bl. 29 bgs.
Saffron
Valencia, 1 cs. Inman & Int. S S. Co.

Farina—
Fiume, 400 sks.
Antwerp, 5 bgs.

Glucose—
New York, 70 brls.

Iodine—
Valparaiso, 29 brls. Vorwerk. Gebr, & Co.
,, 18 A. Gibbs & Sons
,, 27 W. & J. Lockett

Iron Oxide—
Trieste, 9 brls.

Manganese—
Carthagena, 1,500 t. Wigan Coal & Iron Co., Ltd.

Paint—
Boston, 10 cs. Bahr, Behrend. & Ross
,, 20

Phosphate—
Ghent, 1 000 bgs. J. T. Fletcher & Co.
Montreal, 5 brls. Gen. Phospho. Corpo. L.
Treport, 250 t. 299 sks. The Phosphe G. Co.

Phosphate of Lime—
Lisbon, 200 t. G. M. Bauer

Plumbago—
Bombay, 380 bgs. G. Huntriss & Co.
Genoa, 80

Potash—
Montreal, 25 brls. Wilson, Patterson, & Co.

Potassium Carbonate—
Hamburg, 16 cks.

Pyrites—
Huelva, 2,853 t. Matheson & Co.

Rosin—
N. Brunswick, 2,694 brls.
Boston, 1,000
Baltimore, 34
New York, 500 R. P. Houston & Co.

Saltpetre—
Hamburg, 20 kgs.

Silica—
Bremerhaven, 200 bgs.

Soap—
New York, 100 brls. Simmonds, Hunt, & Co.
Rotterdam, 5 cs.
Bari, 452

Soapstone—
Bombay, 700 bgs. W. Harrison & Co.
Genoa, 200 ,,
,, 80

Soda—
Boston, 7 pkgs. J. B. Lloyd
Rotterdam, 40 brls.

Sodium Acetate—
Antwerp, 19 cks. J. T. Fletcher & Co.

Stearine—
New York, 10 hds.
Rotterdam, 10 bxs.
Antwerp, 13 bgs.

Sulphuric Acid—
Havre, 2 pkgs. Cunard S. S. Co., Ltd.

Tallow—
Boston, 150 tcs. 380 brls. 35 hds.
Philadelphia, 50
New York, 55 2 602

Tartar—
Bordeaux, 4 cks.
Ancona, 9

Tartaric Acid—
Rotterdam, 9 cks.

Ultramarine—
Rotterdam, 16 cs. 49 cks.
Hamburg, 4

Verdigris—
Bordeaux, 2 cks.

Waste Salt—
Hamburg, 1,118 bgs.

White Lead—
Ghent, 17 cks.
Rotterdam, 16 O. & H. Marcus
,, 15

Zinc Oxide—
New York, 100 brls.
Antwerp, 15 J. T. Fletcher & Co.
,, 80 brls.

GLASGOW.

Period ending June 16th.

Alkali—
Ghent, 11 jars

Alum—
Hamburg, 106 cks.

Ammonium Carbonate—
Christiania, 3 brls.

Barytes—
Rotterdam, 46 cks.

Barytes Sulphate—
Ghent, 600 bgs.

Boracic Acid—
Leghorn, 10 cks.

Chemicals *(otherwise undescribed)*
Christiania, 2 cks.

Colours—
Hamburgh, 29 cks.
Rotterdam, 3 cs. 1 69 brls. 6 bxs. J. Rankine & Son
,, 5 G. & J. Boyd

Cream of Tartar—
Rotterdam. 28 cks. J. Rankine & Son

Dyestuffs—
Alizarine
Rotterdam, 105 cks.
,, 31 brls. 1 bx. J. Rankine & Son
Aniline Colours
Rotterdam, 3 cs. 2 cks. J. Rankine & Son
Annatto
Bordeaux, 3 cks.
Extracts
Ghent, 85 cks.
Hamburg, 1 cs.
Madder
Rotterdam, 3 cks. J. Rankine & Son
Sumac
Palermo, 1,100 bgs. 5 bls.
Tannin
Hamburg, 4 cks. 6 cs.

French Chalk—
Genoa, 280 bgs.

Glucose—
New York, 598 brls.
Rouen, 6 cks.

Glycerine—
Rotterdam, 4 cs. 1 t. J. Rankine & Son

Lead Acetate—
Hamburg, 13 cks.

Ochre—
Rouen, 11 cks.

Paint—
In transit, 23 css.
Montreal, 60 brls. 50 hf.-brls.

Phosphate of Lime—
Ghent, 494 bgs.

Phosphate of Lime and Rock—
Ghent, 1,050 bgs.

Potash—
Hamburg, 63 cks.

Potassium Prussiate—
Hamburg, 23 cks.

Pyrites—
Huelva, 1,443 t. John Veitch
,, 3,227 Tharsis Co., Ld.

Rosin—
Baltimore, 1,565 brls.

Soap—
Ghent, 1 cs.

Soapstone—
Genoa, 2 css.

Sodium Acetate—
Rouen, 8 cks.

Stearine—
Ghent, 421 bgs. 7 cks.

Sulphur—
Girgenti, 10,000 c. Thomas Laurie

Tallow—
New York, 20 css. 73 brls.
Baltimore, 200 tcs.
Newport News, 120

Tartar—
Bordeaux, 12 cks.
Tartaric Acid—
Rotterdam, 7 cks. J. Rankine & Son
Ultramarine—
Hamburg, 5 cs.
Varnish—
In transit, 20 css.
Waste Salt—
Hamburg, a qty. 135 cks.
White Lead—
Rotterdam, 18 cks. J. Rankine & Son
Hamburg, 13
Zinc Oxide—
Ghent, 85 cks.
Rotterdam, 9 40 brls. J. Rankine & Son
Zinc White—
Rotterdam, 300 cks. J. Rankine & Son

HULL.

Week ending June 11th.

Barytes—
Rotterdam, 72 cks. Blundell, Spence & Co.
Antwerp, 64 Bailey & Leetham
Bremen, 24 Veltmann & Co.
" 44 Tudor & Sons
" 23 H. F. Pudsey
" 23
Rotterdam, 22
Antwerp, 63
Caoutchouc—
New York, 10 brls. Wilson, Sons & Co., Ltd.
Chemicals *(otherwise undescribed)*
Bremen, 3 cs. Veltmann & Co.
New York, 200 bgs. Wilson, Sons, & Co., Ltd.
Dunkirk, 81 pks. "
Antwerp, 40 dms. "
Hamburg, 2 cks. "
Colours—
Amsterdam, 1 ck. W. & C. L. Ringrose
Antwerp, 3 Bailey & Leetham
" 15 brls. 6
Rotterdam, 1 bx. 2 1 cs. 27 pks. G. Lawson & Sons
Ghent, 5 cks.
Bremen, 8 Veltmann & Co.
Rotterdam, 2 pks. Blundell, Spence, & Co.
" 4 cks. Hutchinson & Son
" 2 22 pks. W. & C. L. Ringrose
Hamburg, 6
Flushing, 31 30 7 cs. Zeeland S. S. Co.
Dried Blood—
S. Petersburg, 1,210 bgs. Wilson, Sons, & Co., Ltd.
Dyestuffs—
Alizarine
Rotterdam, 3 pks. 6 cks. W. & C. L. Ringrose
" 22 G. Lawson & Sons
" 10 Hutchinson & Son
Myrabolams
Hamburg, 1,382 bgs.
Bombay, 1,657
Hamburg, 145 pks. G. Lawson & Sons
Valonia
Smyrna, 1,040 bgs. 101 t.
Farina—
Hamburg, 32 bgs. G. Lawson & Sons
Antwerp, 60 Bailey & Leetham
Ghent, 272 bxs. Wilson, Sons, & Co., Ltd.
Stettin, 100 bgs. "
Glucose—
New York, 500 bgs. Wilson, Sons, & Co, Ltd.
" 663 brls.
Dunkirk, 117 pks. "
Naphtha—
Rotterdam, 1 dm. G. Lawson & Sons
Ochre—
Rouen, 23 cks. Rawson & Robinson
Marseilles, 100 cks. Wilson, Sons, & Co., Ltd.
" 59
Phosphate—
Ghent, 100 t.
Pitch—
Hamburg, 58 brls. H. F. Pudsey
Salicylic Acid—
Rotterdam, 1 cs. Hutchinson & Son
Soap—
Marseilles, 2 cs Wilson, Sons & Co., Ld.
Stearine—
Rotterdam, 30 bgs. Wilson, Sons & Co, Ld.
Tallow—
New York, 125 tcs. Wilson, Sons & Co., Ld.
Tar—
Stockholm, 10 brls. Wilson, Sons & Co., Ld.
Konigsberg, 50
Marseilles, 30 cks. Wilson, Sons & Co., Ld.
Tartaric Acid—
Rotterdam, 12 cks. G. Lawson & Sons
Verdigris—
Marseilles, 37 cks. Wilson, Sons & Co., Ld.
Waste Salt—
Hamburg, 488 bgs. Furley & Co.
White Lead—
Antwerp, 85 cks. Bailey & Leetham

TYNE.

Week ending June 11th.

Alum Earth—
Hamburg, 36 cs. 18 cks. Tyne Steam Shipping Co.
Antimony—
Hamburg, 120 cs. Tyne Steam Shipping Co.
Barytes—
Antwerp, 52 cks. Tyne Steam Shipping Co
Colours—
Hamburg, 43 cks. Tyne Steam Shipping Co
Rotterdam, 1 brl. 4 cs. "
Antwerp, 2 cks. "
Phosphate—
Montreal, 425 t.
Salt—
Hamburg, 180 t. Tharsis Sulphur & Copper Co.
Saltpetre—
Hamburg, 8 cks. Tyne Steam Shipping Co.
Soda—
Rotterdam, 26 cks. Ty Shi
Stearine—
Antwerp, 13 bgs. Ty Shi
Sulphur—
Huelva, 2,407 t. Sc
Ultramarine—
Hamburg, 4 cks. Ty Shi

GOOLE.

Week ending May 26t

Caoutchouc—
Boulogne, 4 cks.
Dyestuffs—
Extracts
Hamburg, 13 cks.
Naphthol Salt
Rotterdam, 1 brl.
Dyestuffs *(otherwise unde*
Boulogne, 62 cks. 34 cs.
Rotterdam, 5
Phosphate—
Ghent, 816 bgs.
Potash—
Calais, 41 cks. 40 dms
Dunkirk, 1 39
Saltpetre—
Hamburg, 4 cks.
Rotterdam, 200 bgs.
Waste Salt—
Hamburg, 188 cks. 500 bgs
Rouen, 29

GRIMSBY

Week ending May 29

Caoutchouc—
Hamburg, 49 pkgs.
Chemicals *(otherwise unde*
Antwerp, 21 cks.
Hamburg, 22 pkgs.
Dyestuffs *(otherwise unde*
Dieppe, 31 cks.
Pitch—
Dieppe, 5 cks.

EXPORTS OF CHEMICAL PRODUCTS

OF

THE PRINCIPAL PORTS OF THE UNITED KINGDOM.

LONDON.

Period ending June 11th.

Acetic Acid—
Wellington, £35
Acids—
Natal, 10 cs. £17
Madras, 10 11
Alkali—
Rockhampton, 3 t. 3 c. £20
E. London, 1 5 27
Melbourne, 1 13 51
Alum—
Salonica, 14 t. 8 c. £78
Rabat, 4 10 25
Alum Cake—
Calcutta, 97 t. 10 c. £345
Aluminous Cake—
Rotterdam, 26 t. 15 c. £100
Ammonia—
Hamburg, 7 c. £82
Ammonium Carbonate—
Melbourne, 20 cs. £31
St. Petersburg, 45 t. 10 c. 416
Odessa, 5 5 373
Ammonium Chloride
Cologne, 6 cks. £37
Stockholm, 1 t. 2 c. 36
Galatz, 16 27
Constantinople, 2 63
Ammonium Nitrate—
Sydney, 22 pkgs. £134
Ammonium Sulphate—
Valencia, 191 t. 11 c. £1,916
Philadelphia, 66 16 700
Cullera, 223 3 2,232
Torrevieja, 74 8 743
Cologne, 17 170
Barbadoes, 58 674
Grenada, 1 1 11
Rouen, 10 100
Hamburg, 10 100
Arsenic—
Sydney, 2 t. 4 c. £26
Calcutta, 5 109
Amsterdam, 6 brls. 15
Bisulphide of Carbon—
Rotterdam, 5 t. 6 c. £72
Bleaching Powder—
Cleveland Bay, 12 t. 2 c. £159
Borax—
Copenhagen, 19 c. £43
Hamburg, 11 cks. 102
Keppel Bay, 1 t. 6 c. 37
Carbolic Acid—
Gibraltar, 8 c. £16
Rotterdam, 40 cks. 179
Genoa, 9 cs. 25
Dusseldorf, 161 179
Treport, 50 105
Sydney, 5 11
Caustic Soda—
Philadelphia, 15 t. £166
Algoa Bay, 13 c. 29
Rio de Janeiro, 10 3 122
Brisbane, 10 19
Mossamedes, 4 6
Zanzibar, 1 7 17
Chemicals *(otherwise undescribed.)*
Sydney, 30 drs. 49 pkgs. 30 kgs. £197
Bombay, 24 cs. 87
Auckland, 2 10
Algoa Bay, 29 57
Cape Town, 5 12
Brisbane, 12 14
Tuticorin, 7 c. 23
Natal, 55 20
E. London, 16 61
Adelaide, 12 45 crts. 98
Bangkok, 2 16
Chloride of Lime—
Gibraltar, 3 t. 2 c. £37
Citric Acid—
Libau, 3 c. £26
Riga, 3 25
Calcutta, 2 cs. 17
Hamburg, 1 t. 168
Bombay, 2 13
B. Ayres, 6 46
Barcelona, 9 cks. 135
Hobart, 1 5
Odessa, 2 19
Pasages, 3 brls. 45
Rotterdam, 3
Bombay, 1
St. Petersburg, 10
Coal Products—
Aniline
Brisbane, 1 cs.
New York, 12 drs.
Benzol
Calais; 19 pns.
Rotterdam, 17 drs. 29
Hamburg, 39
Creosote
Gothenburg, 25 brls.
Naphtha
Treport, 27 brls.
Calais, 25 rnlts.
Naphthalene
Hamburg, 7 cks.
Dunkirk, 1
Stettin, 100 bgs.
Pitch
Constantinople, 150 brls.
Antwerp, 170 t.
Naples, 100 cks.
Tar
Auckland, 50 drs.
Danzig, 250 brls.
Calcutta, 200 p
Sydney, 25
Algoa Bay, 100
Flushing, 1
Galatz, 50

Copperas—
Varna, 5 . 9 c. £11
Copper Sulphate—
Marseilles, 25 t. 7 c. £359
Treport, 20 5 300
Paris, 60 955
Bordeaux, 171 2,706
Rouen, 25 10 305
Odessa, 34 5 520
Corrosive Sublimate—
Salonica, 3 cs. £30
Cream of Tartar—
Sydney, 1 t. £88
Adelaide, 10 c. 50
Wellington, 16 cks. 4 109
Townsville, 10 48
Melbourne, 2 177
Disinfectants—
Sydney, 19 cs. £111
Melbourne, 3 30
Brisbane, 12 css. 11 pkgs. 91
Barbadoes, 31 100
Melbourne, 500 drs. 20 cks. 655
Hamburg, 15 75
Kingston, 30 11
Botterdam, 10 50
Natal, 300 61
Flowers of Sulphur—
Algoa Bay, 9 t. 12 c. £107
Glycerine—
Bordeaux, 5 c. £11
Baltimore, 10 t. 8 145
New York, 10 cs. 40
Hypophosphite of Lime—
Philadelphia, 10 c. £138
New York, 6 44
Manure—
Malaga, 14 t. 8 c. £112
Valencia, 550 4,400
Cullera, 592 5 4,805
Barbadoes, 269 14 2,540
Guadeloupe, 135 1,620
Nevis, 35 350
St. Kitts, 5 53
Gr. Canary, 100 920
Hamburg, 473 4,966
Messina, 1 20
Alicante, 14 8 112
Oxalic Acid—
Sydney, 11 c. £17
Hamburg, 1 t. 5 33
Paris, 5 150
Antwerp, 1 19 50
Odessa, 3 60
St. Petersburg, 20 11 565
Phosphoric Acid—
Tuticorin, 33 cks. £15
Sydney, 4 cs. 35
New York, 4 c. 26
Phosphorus—
Lisbon, 2 cs. £22
Malta, 1 22
Picric Acid—
Melbourne, 13 c. £62
Potassium Bichromate—
Keppel Bay, 1 t. 8 c. £61
Potassium Chlorate—
Lisbon, 10 c. £30
Melbourne, 10 kgs. 31
Potassium Hypophosphite—
New York, 2 c. £33
Salt Cake—
Melbourne, 27 t. 11 c. £80
Antwerp, 145 254
Saltpetre—
Porto Alegre, 1 t. 6 c. £32
Wellington, 15 18
Santos, 13 19 312
Oporto, 10 16 222
Melbourne, 1 22
Natal, 1 10 35
Keppel Bay, 1 16 48
Bahia, 10 13 238
Rio de Janeiro, 13 12 312
Savanilla, 1 17 42
Dunedin, 10 12
Madeira, 8 10
Bilbao, 2 10 52
Lisbon, 7 7 149
Gothenburg, 1 21
Sheep Dip—
Melbourne, 50 cs. £105
B. Ayres, 80 drs. 20
New York, 100 300
Natal, 1 t. 7 c. 500 157
Hamburg, 11 28
Soda—
Wellington, 13 t. £47
Cape Town, 10 c. 4
Soda Ash—
Melbourne, 25 t. 2 c. £177

Soda Crystals—
Trinidad, 2 t. 3 c. £8
New York, 10 2
Zanzibar, 1 5
Sodium Bicarbonate—
Kingston, 10 c. £4
Trinidad, 17 9
Keppel Bay, 1 t. 8
Sodium Hypophosphite—
New York, 3 c. £49
Sodium Tartrate—
Brussels, 5 c. £18
Montreal, 11 35
Strontium Nitrate—
New York, 100 kgs. £142
Sulphate of Lime—
Cape Town, 6 brls. £25
Sulphated Salt
Rio de Janeiro, 2 t. 5 c. £21
Sulphur—
Demerara, 3 t. £24
Rio de Janeiro, 10 c. 7
Savanilla, 12 7
Sulphuric Acid—
Colombo, 3 t. 15 c. £38
Bombay, 10 cs. 11
Algoa Bay, 100 drs. 70 189
Natal, 4 t. 19 c. 20
Zanzibar, 1 10 15
Madras, 25 19
Superphosphate—
Natal, 24 t. 6 c. £79
Tartaric Acid—
Libau, 2 c. £14
Adelaide, 10 58
Vigo, 6 32
Wellington, 52
Brisbane, 10 cs. 113
Wellington, 3 17
Melbourne, 5 t 20 cks. 638
Launceston, 2 12
Bilbao, 1 36
Cape Town, 5 23

LIVERPOOL.

Period ending June 11th.

Acetic Acid—
Lisbon, 15 c. 1 q. £15
Piræus, 1 t. 14 3 30
Alum—
Montreal, 14 t. £84
Melbourne, 4 11 c. 23
Malta, 1 1 5
Havana, 13 cks. 23
Seville, 3 2 14
Hong Kong, 2 4 14
Calcutta, 41 18 209
Adelaide, 2 10
Buenos Ayres, 8 16 46
St. John's, N.B., 2 19 15
Smyrna, 3 8 18
Sydney, 1 6
Beyrout, 3 10 18
Alum Cake—
Calcutta, 12 t. 4 c. 2 q. £44
Santa Catherina, 1 6
Ammonia—
Valparaiso, 3 c. £5
Ammonium Carbonate—
Rotterdam, 2 t. 1 c. 2 q. £68
Valparaiso, 1 37
Gothenburg, 10 2 18
Leghorn, 15 25
Lisbon, 10 2 15
Matanzas, 5 3 11
Callao, 9 21
Montreal, 1 2 2 19
Marseilles, 1 1 1 30
Venice, 1 28
Ammonium Chloride—
Trieste, 1 t. £33
Philadelphia, 13 15 c. 6 q. 310
Smyrna, 1 7 44
New York, 3 4 3 80
Boston, 1 13 1 41
Naples, 1 1 1 35
Montreal, 3 10 120
Melbourne, 2 cks. 14
Antwerp, 9 2 11
Genoa, 2 6 1 40
Malta, 4 7
Ammonium Sulphate—
Arucas, 5 t. 6 c. £55
Boston, 19 8 2 q. 220
Las Palmas, 22 8 2 225
Barbadoes, 49 12 3 496
Bordeaux, 15 9 153
Leghorn, 100 1,200
G. Canary, 27 2 2 296
Oporto, 2 20
Nantes, 788 bgs. 880
Las Palmas, 26 9 4 265
New York, 50 17 2 512
TonneyCharente, 123 5 2 1,230
Valencia, 139 4 3 1,551
Philadelphia, 51 4 1 517
Antimony Regulus—
Montreal, 6 276
Antimony Sulphate—
Santiago de Caba, 2 c. £20
Bleaching Powder—
East St. Louis, 30 bxs. 55 pkgs.
Lisbon, 15 cks.
Montreal, 54
New York, 582 125 brls.
Santander, 6
Boston, 586
Calcutta, 100 cs.
Constantinople, 1
Gefle, 5
Ghent, 21
Boracic Acid—
Montreal, 2 t. 1 q. £76
Antwerp, 1 3 c. 1 44
Rotterdam, 2 11 101
Yokohama, 1 9 2 90
Borate of Lime—
Callao, 3 c. 2 q. £5
Borax—
Rio de Janeiro, 4 c. £7
Galatz, 1 t. 2 28
New Orleans, 3 q. 6
Hamburg, 1 1 31
Norrkoping, 6 1 8
Rotterdam, 20 1 599
London, Ont., 10 3 16
Sydney, 5 14 1 167
Vera Cruz, 12 8
Stockholm, 11 2 17
Antwerp, 11 17 355
Alexandria, 1 2 33
Havana, 3 1 5
Malta, 6 10
Carbolic Acid—
Antwerp, 24 t. 19 c. £887
Barcelona, 8 6 q. 36
New York, 9 7 2 246
Hamburg, 6 18 3 366
Caustic Potash—
Stockholm, 6 c. £10
New York, 15 t. 19 445
Caustic Soda—
Amsterdam, 122 dms.
Baltimore, 135 brls.
Bilbao, 425
Boston, 135 10
Galatz, 17 115 kgs.
Genoa, 202
Hamburg, 4
Melbourne, 50
Montreal, 250
Rotterdam, 133
San Sebastian, 25 20 cks.
Santos, 80
Shanghai, 2
Alicante, 40 50
Barcelona, 20 40
Cartagena, Spain, 10
Ceara, 30
East St. Louis, 25 20 bxs.
Havana, 20
Jaffa, 53
Leghorn, 20
Malaga, 192
Malta, 53
Naples, 35
Oporto, 44
Pernambuco, 25
Philadelphia, 25
Santander, 31
San Francisco, 200
Seville, 200
Stockholm, 12
Tarragona, 30 10
Venice, 70
Alexandria, 14
Antwerp, 15
Buenos Ayres, 30
Cadiz, 8 10
Carril, 6
Corfu, 40
Lisbon, 10
New York, 842
Pernambuco, 145
Rouen, 35
Valparaiso, 270
Chemicals *(otherwise undescribed)*
Montreal, 1 t. £34
Smyrna, 6 c. 9
Hiogo, 20 cs. 38
Antwerp, 18 30
Rotterdam, 2 1 3 q. 38
Odessa, 2 8 3 75
Malta, 15 24
Volo, 8 12
Syra, 5 8
Christiania, 3 5
Riga, 9 2 15
Citric Acid—
Mexico City, 2 c. £15
Cobalt Oxide—
New York, 10 cs. £400
Copperas—
Rodosto, 3 t. 15 c. £7
Callao, 3 7
Alexandria, 14 13 28
Singapore, 3 6 7
Piræus, 2 9 5
Aleppo, 7 19 16
Montreal, 20 13 41
Galatz, 7 13
Buenos Ayres, 5 10 12
Copper Sulphate—
Pernambuco, 17 c. 3 q. £15
Almeira, 1 2 2 16
Rouen, 134 2,072
Venice, 16 5 3 250
Valparaiso, 10 160
Ghent, 9 17 150
Ibrail, 3 49
Naples, 6 5 1 91
Mollendo, 10 12
Tarragona, 19 14
Oporto, 1 15
Buenos Ayres, 9 9 1 138
Barcelona, 57 14 3 876
Bordeaux, 125 1 2 1,910
Cream of Tartar—
Halifax, 2 t. 10 c. £200
Disinfectants—
Bombay, 2 t. 13 c. £39
Calcutta, 2 cs. 24
Glycerine—
Valparaiso, 1 c. 2 q. £7
New York, 8 t. 400
Savanilla, 2 1 9
Rosario, 3 2 30
Gypsum—
Gefle, 1 t. 8 c. £5
Iron Oxide—
Gijon, 1 t. 14 c. 3 q. £9
Lead Acetate—
Montreal, 1 t. 13 c. £50
Bilbao, 5 2 q. 8
Piræus, 9 2 13
Manganese—
Antwerp, 8¼ t.
Baltimore, 16
Boston, 50
Magnesia—
Rosario, 5 cs.
Magnesium Carbonate—
Rosario, 7 c. £9
Magnesium Chloride—
Batavia, 1 t. 13 c. £23
Magnesium Sulphate—
Santander, 3 t. 19 c. £17
Bilbao, 1 13 1 q. 10
Montreal, 50 cks.
Alexandria, 40 kgs.
Seville, 15 9 1 60
Manure—
New York, 5 c. £9
Havana, 12 1 q. 28
Teneriffe, 32 t. 9 3 257
Calcutta, 13 1 35
Ochre—
Buenos Ayres, 20 brls.
Oxalic Acid—
Genoa, 6 c. 2 q. £10
Antwerp, 11 t. 11 314
Ghent, 3 3 2 86
Paint—
Brass, 24 dms. 8 kgs.
Havana, 40 5 cks. 22 pkgs.
Kingston, 100
La Libertad, 10
Manaos, 10
M. Video, 6 cs. 4 5 brls.
Panama, 27 1 19
Para, 7 tcs. 1 15 146 21
Pernambuco, 1 10
Rio de Janeiro, 3 28 cs. 200
Rotterdam, 16 dms. 1 2 kgs. 35
San Francisco, 10
San Juan, 20 cs. 6 120 bgs. 1 tcs.
Santander, 26
Settle Camna, 5 cs.
Sierra Leone, 134 kgs.
Sydney, 28 brls.
Talcahuano, 46 cs.
Valparaiso, 429 95 340 371
100 dms.
Alexandria, 44
Antafagasta, 16 cs. 2

Beyrout, 60
Cadiz, 40 dms.
Calcutta, 6 cs. 600
Curacao, 1
Genoa, 5 bxs.
Iceland, 3 dms.
Malta, 1
Mendoza, 100 3 crts. 46 brls.
Miramichi, 8
Old Calabar, 50 6 cs. 5
Ottawa, 48 cks.
Pisagua, 50 5 40 cs.
Ponce. 8 10
Porto Rico, 9
Santa Catherina. 59
Santiago de Cuba, 1
Santo Domingo, 6 tcs.
Sagua la Grande. 10 kgs.
St. John's, N.B., 4 49
St John's, Nfld, 23 6
Savanilla, 270
Shanghai, 25
Smyrna, 35 dms
Sulina, 10
Syra, 4
Toronto, 2
Accra, 10 3 tins.
Antwerp, 13
Candia, 40
C.C.Castle, 10 37
Capetown, 34
Cienfuegos, 2
Colombo, 17
Kurrachee, 4 pkgs.
Lagos, 2
Matanzas, 2
Mayaquez, 2 4
Port Elizabeth, 16 4 dms.
Quebec, 4
San Juan, 20 cs. 10 3 brls. 1
120 bgs. 1 tc.

Painters' Colours—
Buenos Ayres, 155 brls. 80 kgs.
Calcutta, 10 cs.
Callao, 127
Colombo, 5
Coquimbo, 30
London, On., 30 cs. 1 85 50 dms.
Monte Video, 13 11
Mytilene, 2
Alexandria, 10
Antofagasta, 20
Capetown, 5 cs. 52
Colon, 2 cks.
Curacao, 1 3
Galatz, 50
Havana, 2 tcs. 27 kgs. 4 cks. 120 brls.
,, 3
Iquique, 8 cs.
Montreal, 17 10 dms. 26 4
New York, 12 13
Antwerp, 13
Bahia, 36 kgs. 1
Boston, 2
Cienfuegos, 3
Colombo, 10
Corfu, 3 13
Gijon, 1
Guayaquil, 25 10
Hamburg, 13 pkgs.
Jeremie, 50 kgs.
La Libertad, 2
Leghorn, 5
Matadi, 24 dms.
Matanzas, 100
New Orleans, 200
Ottawa, 10 cs. 15 1
Rio de Janeiro, 13 cs.
St. John's, N.B., 32
Santa Cruz de Teneriffe, 20 kgs.
Santiago de Cuba, 1
Toronto, 10 cs. 26

Phosphorus—
Monte Video, 3 c. 3 q. £44
Mexico City, 8 2 100
Hiogo, 10 cs. 130
Shanghai, 10 100
Yokohama, 10 100
Santiago, 2 22

Pitch—
Genoa, 210 t.
Havre, 420

Potash—
Havana, 5 c. 1 q. £13

Potassium Bichromate—
Marseilles, 2 t. 3 c. 2 q. £45
Montreal, 1 4 2 45

Potassium Carbonate—
New York, 17 t. 17 c. £353
East St. Louis, 3 2 65

Potassium Chlorate—
Odessa, 1 t. 3 c. 1 q. £72
Stockholm, 11 10 598
Genoa, 14 34
Montreal, 1 2 56
St. Petersburg, 5 250
Pasages, 1 10 70
New York, 22 7 2 1,107
Mexico City, 1 50
Antwerp, 1 50
Barcelona, 3 144
Hiogo, 7 10 374

Potassium Nitrate—
Lanzarotte, 7 t. £69

Potassium Prussiate—
Kurrachee, 2 c. 1 q. £10

Potassium Silicate—
Amsterdam, 1 t. 4 c. £6

Salt—
Boston, 600 t.
Cameroons, 94
Capetown, 43
Chicago, 120
Iquique, 30 cs.
Kansas, 65
M.Video, 50 brls.
New York, 50 20 cks.
Old Calabar, 51
Rotterdam, 200
Accra. 5
Ambriz, 14
Bakana, 40
Brass, 9½
Calcutta, 3,979
C. C. Castle, 12
Coquimbo, 2
Gaboon, 9
Ghent, 180
Hamburg, 78
Iceland, 256
Loango, 78
Montreal, 150
Newport News, 100
New Orleans, 500
Opobo, 43½
Philadelphia, 20
Picton, 330
Santos. 30 cs.
Sand Heads, 24
Shediac, N.B., 299 7 c.
Sherbro, 100
Sydney, 232
Valparaiso, 109
Victoria, V.I., 10½
Abonnema, 9½
Archangel, 300
Bakana, 28
Black Point, 5
Buenos Ayres, 50
East London, 80
Landana, 5
Para, 1,400 bgs.
Quebec, 27 18 c.
St. John's, N.B., 400
Sydney, 300
Trangesund, 500

Salt Cake—
Baltimore, 101 t. 3 c. £250
East St. Louis, 191 7 472
Philadelphia, 51 4 1 q. 517

Saltpetre—
Santa Catherina, 1 t. £22
San Francisco, 3 8 c. 2 q. 72
Piræus, 7 10 161
Montreal, 10 10
Barcelona, 2 7 3 40
Para, 3 15 80
Savanilla, 2 7 2 59

Sheep Dip—
East London, 3 t. 2 c. 2 q. £97
Baltimore, 10 65
Punta Arenas, 30 210

Soap—
Buenos Ayres, 1 cs.
Calcutta, 42
East London, 40 1,502 bxs.
Naples, 6
New York, 89 495 6 brls.
Port Natal, 35 1,045
Rotterdam, 100 5
Salonica, 10
Shanghai, 7 cks. 1,804
Sydney, 1,480
Toronto, 500
Valparaiso, 251 50 dms.
Accra, 242
Algoa Bay, 2,744
Barbadoes, 1 924
Benin, 650
Bombay, 13 1,000 8 cks.
Capetown, 2,350
Constantinople, 1 400
Corfu, 6
Durban, 180
Genoa, 28
Halifax, 2
Iquique, 1
Lagos, 404
Mauritius, 600
Pernambuco, 1
Piræus, 162
Pram Pram, 40
Quittah, 40 bxs.
Reunion, 200
San Juan, 100
St Johns, Nfld., 175
St. Lucia, 326
Savannah, 50
Teneriffe, 233
Warre, 50
Addah, 20
Bakana, 200
Bocas del toro, 50
Cameroons, 120
Canaria, 230
C. C. Castle, 100
Cape Lopez, 50
Curacao, 60
Dixcove, 8
Egwanga, 1,000
Ferrol, 24
Ghent, 60
Gibraltar, 337
Hong Kong, 400
Kurrachee, 650
Loanda, 80
Loango, 30
Malta. 40
Manaos, 980
Matadi, 10
Mehillah, 100
Monrovia, 64
New Orleans. 100
Old Calabar, 1,700
Opobo, 500
Palma, 224
Para, 100
Penang, 200
Pernambuco, 1 cs.
Port Elizabeth, 500
,, Limon, 25
Puebla, 1 cs.
Rangoon, 1,000
Rouen, 31 brls.
St. Kitts, 300
Sierra Leone, 80
Singapore, 1,300

Soda Alkali—
Genoa, 17 brls.
Leghorn, 80
Montreal, 50
Toronto, 115
Odessa, 50

Soda Ash—
Baltimore, 487 cks.
Callao, 15 70 kgs
Canada, 26
Melbourne, 112
Montreal, 56 brls
Oporto, 2
Philadelphia, 193
Porto Alegre, 75
Rio Grande, 10
Toronto. 25
Buenos Ayres, 50
Ghent, 18
Jaffa, 60
Madeira, 4
Pelotas, 30
Rio de Janeiro, 100
Boston 373 1,160 bgs.
Cadiz. 4
New York, 2,351 1,545 152 tcs.
Patras, 10 brls.
Pernambuco, 15
Piræus, 50
Rio de Janeiro, 180

Soda Crystals—
Canada, 100 kgs.
Toronto, 60 brls.
Boston, 280 280 bgs.
Buenos Ayres, 50
Halifax, 2 33
New York, 200
Santander, 13
St. John's, Nfld., 10
Alexandria, 42
Bilbao, 23
Bombay, 5 200
Capetown, 25
Constantinople, 125 cks.
Genoa, 4 brls.
Hong Kong, 50
Malaga, 4
Montreal, 100
San Francisco, 166

Sodium Arseniate—
New York, 5 cks. 10 brls.

Sodium Biborate—
Hamburg, 2 t. 3 c. 2 q. £65
Havre, 12 2 19
Montreal, 6 19 3 210
Buenos Ayres, 3 2 3 94
Melbourne, 10 15
Rotterdam, 1 1 32
Yokohama, 1 38

Sodium Bicarbonate—
Alicante, 200 kgs. 50 brl
Antwerp,
Barcelona, 500 100
Beyrout, 20
Bilbao, 40
Canada, 25
Ghent, 10
Havre, 275
Limassol, 10
Montreal, 100
Salonica, 20
Toronto, 200 10
Valencia, 50
Bremerhaven, 15
Callao, 2
Malta, 25
Naples, 100
New York,
Rotterdam,
Smyrna, 20
Trinidad, 40
Venice, 50
Bombay, 150
Copenhagen, 340
Genoa, 140
Malaga, 40 4
Matanzas, 20
Rouen, 10 5

Sodium Bichromate—
Havre, 1 t. 15 c. 1 c
Piræus, 4 7

Sodium Carbonate—
Boston, 84 brls.
New York, 168

Sodium Hyposulphite—
Callao, 1 t

Sodium Nitrate—
Almeria, 2 t. 17 c. 2 q
Sydney, 4 19 1
Lisbon, 22 5 2
Trieste, 12 16 3
Cartagena, 5 1
Malaga, 16 9 3
Oporto. 1 1 1
Christiania, 2 9 3

Sodium Silicate—
Accra, 7 brls.
Barcelona, 39 cks. 50
Cartagena, Spain, 6
Gibraltar, 13
Ibrail, 10
Lisbon, 60
Madeira, 6
Oporto, 25
Riga, 29
San Sebastian, 64
Seville, 116
Tarragona, 12
Buenos Ayres, 20
Malaga, 14

Sodium Stannate—
Rouen, 6 cks.

Sodium Sulphate—
Valencia, 7 t. 3 q.

Sulphur—
Calcutta, 10 t. 4 c.
Pernambuco, 3 12
Para, 15

Sulphuric Acid—
Rio Grande do Sul, 12 cs.

Superphosphate—
Las Palmas, 11 t.
Barcelona, 20 t.

Tallow—
Axim, 7 tcs.
Colombo, 2 cks.

Tar—
Addah, 10 brls.
Ilo Ilo, 50 dms.
St. John's, Nfld., 50
Genoa, 1 ck.
Mollendo, 50
Sierra Leone, 6 12 kgs.

Tartaric Acid—
Matanzas, 4 c.

Turpentine—
Copenhagen, 4 brls.
Isles de Los, 15 dms.

Varnish—
Cartagena, Spain, 1 ck.
Alicante, 13 cs.
Barcelona, 18 brls.
Calcutta, 5
Capetown, 2
Genoa, 2 cks.
Leghorn, 2
Monte Video, 1
Montreal, 4 3 dms.
Naples 5

White Lead—
Ferrol, 4 kgs. 23 cks.
Zinc Chloride—
Bombay, 1 t. 18 c. £27
Piræus, 6 6 3 q. 110
Zinc Sulphate—
Bombay, 3 t. £60

GLASGOW.

Period ending June 16th.

Acid—
M. Video, 3¼ c. £5
Nickerie, 18¾ 6
Ammonium Sulphate—
Demerara, 84 t. 14 c. £859
Trinidad, 86 1¾ 919
Valencia, 40 6¼ 475
New York, 10 19¾ 110
Bichrome—
Rouen, 73 t 13½ c. £1963
Gothenburg, 5 7 183
Valencia, 15 1 492
Italy, 24 10¾ 766
Venice 5 17¾ 193
Bleaching Powder—
Hong Kong, 3 t. 6 c. £24
Calcutta, 33½ 290
Caustic Soda—
Rouen, 15½ t. £141
Jamaica, 15 120
Chloride of Lime—
Boston, 6 t. 6 c. £52
New York, 49 18 410
Cobalt—
Rotterdam, 22 t. £1,100
Copperas—
Bombay, 19 t. 7 c. £40
Creosote Oil—
Hong Kong, 4 t. 8 c. £6
Dyestuffs—
Aniline
Oporto, 2 t. 2¼ c. £70
Extracts
Barcelona, 8 t. 6¾ c. £203
Quebec, 16 3½ 479
Valencia, 7 18½ 232
Montreal, 179
Pastic Extract
Quebec, 2 t. 17½ c. £94
Montreal, 148
Patant Indigo
Melbourne, 46¾ c. £90
Farina—
Bombay, 2 t. £28
Oporto, 2 10 c. 50
Guano—
Nickerie, 8 c. £69
Linseed Oil—
Quebec, 6 t. 4 c. £174
Cape Colony, 73
Mauritius, 3 1 67
Malta, 1 1¾ 21
Montreal, 5 ¼ 86
Manganese—
Italy, 2 t. 3 c. £22
Magnesium Sulphate—
Melbourne, 5 t. 19¾ c. £25
Calcutta, 5 25
Manure—
Demerara, 83 t. 7 c. £832
Valencia, 103 9 1,035
New York, 11 7¾ 50
Muriatic and Nitric Acid—
China, £21
Naphtha—
Rouen, 19 t. 13½ c. £285
Nitrate of Lead—
Quebec, 2 t. 15½ c. £36
Nitric Acid—
Bombay, 4 t. 5½ c. £145
Ochre—
Nickerie, 8 c. £1 11s. 5d.
Paint—
Rotterdam, 2 dms. £2. 12s.
Jamaica, 1 t. 3⅓ c. 20 10s.
Melbourne, 1 18 26
Natal, 1 9½ 40 16s.
Bombay, 1 75
Nickerie, 12 9 16s.
Malta, 2 5½ 33 18s.
New York, 139 8¾ 2,429
Painters' Colours—
Quebec, 16 c. £44
Cape Colony, 48
Colombo, 5 t. 8 54
Trinidad, 3 7 51
Mauritius, 8 17¼ 109
Rotterdam, 1 ck. £6. 10s.
Paraffin Wax
Japan, 15 t. 17½ c. £402
Rouen, 6 19¼ 216
Cape Colony, 11 14 459
Hungary, 19¾ 36
Valencia, 9 4½ 243
Oporto, 1 3¼ 35
Italy, 5 t. 5⅛ c. 174
Venice, 6 t. 2 c 210
Phosphate—
Demerara, 15 t. £40
Pitch—
Bombay, 71 t. 6¼ c. £53 10s.
Philadelphia, 2 3½ £22
Quebec, 29 6¼ 66
Boston, 68 13 138
Gothenburg, 20 5 55
Potassium Bichromate
Quebec, 6 t 4¼ c. £239
Rotterdam, 11 cks. 141
Boston, 10 16 456
Montreal, 1 19 82
New York, 9 1¼ 381
Pyrogallic Acid—
Quebec, 3½ c £23
Rosin—
Bombay, 10 t. 16 c. £40
Salt—
Mauritius, 288 t. 1¾ c. £357
Soap—
Bombay, 3 t. 14½ c. £37. 12s.
Trinidad, 8 ½ £140
New York, 5 5 100
Soda—
Quebec, 7 t. 16 c. £23
Calcutta, 5¾ 2
Nickerie, 2 12s.
Sodium Bichromate—
Rouen, 10 t. 16¼ c. £250
Italy, 7 6½ 160
Montreal, 2 6½ 71
New York, 9 1¼ 318
Stearine—
Melbourne, 4 t. £145
Sulphur—
Demerara, £25
Rouen, 10 t. 1 c. 50
Nickerie, 26 12
Sulphuric Acid—
Trinidad, 3 t. 9¼ c. £30
Tallow—
Nickerie, 3½ c. £4. 15s.
Rotterdam, 18 t. 6¼ 618
Tar—
Bombay, 16 t. 14 c. £31
Colombo, 10 14 £37. 10s.
Turpentine—
Nickerie, 15 c £1. 18s.
Waste Salt—
Bombay, 9 t. 13¾ c. £23
White Lead—
Melbourne, 2 t. 11 c. £56
Boston, 1 15½ £37. 10s.

HULL.

Week ending June 11th.

Alkali—
Abo, 20 dms. 1 ck.
Bergen, 2 cks.
Helsingfors, 65 kgs.
Alum—
Abo, 21 cks.
Christiania, 335 slbs.
Wasa, 1
Benzol—
Ghent, 15 cks.
Bleaching Powder—
Bergen, 4 cks.
Carbolic Ammonia—
Amsterdam, 12 cks.
Caustic Soda—
Abo, 3 cks.
Wasa, 1
Chemicals *(otherwise undescribed)*
Antwerp, 1 cs.
Abo, 4 cks.
Bremen, 2 13 kgs.
Christiania, 6 13 10 pkgs.
Gothenburg, 8 50 32 327 slbs.
Hamburg, 120 58
Norrkoping, 200 t. 67
Rotterdam, 1 1,300
Colours—
Rotterdam, 3 cks.
Cottonseed Oil—
Amsterdam, 220 c.
Flushing, 87
Ghent, 7
Rotterdam, 1,357
Dyestuffs—
Aniline
Antwerp, 2 cks.
Myrabolams
Christiania, 30 bgs.
Dyestuffs *(otherwise undescribed)*
Christiania, 10 bgs.
Rotterdam, 1 cs.
Linseed Oil—
Antwerp, 85 c.
Amsterdam, 102
Bergen, 204
Christiania, 801
Hango, 105
Hamburg, 34
Rotterdam, 60
Wasa, 106
Manganese—
Antwerp, 2 cks.
Manure—
Hamburg, 300 bgs.
Rotterdam, 480
Naphtha—
Rotterdam, 22 dms.
Painters' Colours—
Antwerp, 5 cs. 21 cks 194 pkgs.
Amsterdam, 11
Abo, 2 3 kgs.
Bergen, 175 dms.
Christiania, 3 134
Gothenburg, 1 cs. 10 5
Ghent, 12
Hamburg, 16
Rotterdam, 19 1
Wasa, 75 dms. 3 50
Pitch—
Antwerp, 300 t.
Rosin—
Christiania, 25 cks.
Soap—
Bremen, 3 cks.
Soda Ash—
Bremen, 3 cks.
Sulphur—
Norrkoping, 100 bgs.
Tar—
Antwerp, 2 cks.
Amsterdam, 9
Abo, 5
Bremen, 4
Christiania, 5
Gothenburg, 50
Helsingfors, 4
Rotterdam, 1
Wasa, 81
Varnish—
Antwerp, 2 cks.
Amsterdam, 10
Christiania, 1
Norrkoping, 1
Rotterdam, 1 3 cs.

TYNE.

Week ending June 11th.

Alkali—
Gothenburg, 4 t. 19 c.
Rotterdam, 15 5
Hamburg, 8 3
Ammonia—
Odense, 5 c.
Ammonia Salts—
St. Petersburg, 43 t. 2 c.
Antimony—
Copenhagen, 6 c.
Montreal, 4 t.
Arsenic—
Genoa, 1 t.
St. Petersburg, 10 5 c.
Barytes Carbonate—
Rotterdam, 6 t.
Hamburg, 151 12 c.
Bleaching Powder—
Abo, 16 t. 7 c.
Gothenburg, 13
Rotterdam, 33 2
Odense, 4 18
Copenhagen, 29 14
St. Petersburg, 181 8
Bilbao, 22 16
Drontheim, 20 3
Antwerp, 39 7
Caustic Soda—
Abo, 8 t. 14 c.
Gothenburg, 50 4
Genoa, 30 9
Copenhagen, 1 10
Montreal, 29
St. Petersburg, 87 1
Bilbao, 15 12
Hamburg, 22 3
Litharge—
Gothenburg, 3 t. 14 c.
Montreal, 20 3
Hamburg, 1 10
Antwerp, 17
Christiania, 1 7
Naphtha—
Christiania, 6 c.
Ochre
Montreal, 3 t. 13 c.
Paint—
Hamburg, 1 t. 3 c.
Antwerp, 5
Christiania, 1 1
Potash Salts—
St Petersburg, 7 t.
Rosin—
Drontheim, 12 c.
Salt—
Gothenburg, 5 t.
Soda—
Wasa, 6 t. 18 c.
Abo, 5 9
Uleaborg, 6
Rotterdam, 5 18
Montreal, 10
Soda Ash—
Gothenburg, 3 t. 3 c.
Odense, 16 15
Christiania, 2 10
Soda Crystals—
Vardo, 2 t. 3 c.
Sodium Silicate—
Bilbao, 16 t. 18 c.
Sodium Supersulphate—
Montreal, 1 t. 4 c.
Sulphur—
Frederikstad, 50 t. 1 c.
Gothenburg, 60
Rotterdam, 25
Hamburg, 200
Antwerp, 23 10
Christiania, 25
Superphosphate—
Riga, 185 t.
Tallow—
Bilbao, 18 t.
Hamburg, 14 c.
Tar—
Wasa, 15 c.
Vardo, 7 t. 2 c.
Turpentine—
Antwerp, ½ c.
White Lead—
Montreal, 55 t. 19 c.

GOOLE.

Week ending May 26th.

Chemicals *(otherwise undescribed)*
Rotterdam, 80 cks.
Coal Products *(otherwise undesc'd.)*
Rotterdam, 115 cks.
Dyestuffs *(otherwise undescribed)*
Boulogne, 3 cs. 6 cks.
Ghent, 1
Hamburg, 134 bgs.
Rotterdam, 10 cks.
Manure—
Boulogne, 130 bgs.
Hamburg, 388
Pitch—
Antwerp, 119 t.

GRIMSBY.

Week ending May 29th.

Ammonium Sulphate—
Barcelona, 150 bgs.
Chemicals *(otherwise undescribed)*
Antwerp, 2 cks.
Dieppe, 10
Hamburg, 2 cs. 38 pkgs.
Coal Products *(otherwise undesc'd.)*
Dieppe, 143 cks.
Pitch—
Antwerp, 60 t.

PRICES CURRENT.

WEDNESDAY, June 22nd, 1892.

Prepared by Higginbottom and Co., 116, Portland Street, Manchester.

The values stated are f.o.r. *at maker's works, or at usual ports of shipment in U.K. The price in different localities may vary.*

	£	s.	d.
Acids:—			
Acetic, 25 % and 40 % .. .. per cwt.	7/- & 11/-		
,, Glacial .. .. ,,	50/-		
Arsenic S.G., 2000° .. .. ,,	0	14	6
Fluoric .. .. per lb.	0	0	3¼
Muriatic (Tower Salts), 30° Tw. .. .. .. per bottle	0	0	10
,, (Cylinder), 30° Tw. .. .. ,,	0	3	0
Nitric 80° Tw. .. .. per lb.	0	0	2¼
Nitrous .. .. ,,	0	0	1¾
Oxalic .. .. nett ,,	0	0	3
Phosphoric, 1750° .. .. ,,	0	1	2½
Picric .. .. ,,	0	0	10¼
Sulphuric (fuming 50 %) .. .. per ton	15	10	0
,, (monohydrate) .. .. ,,	5	10	0
,, (Pyrites, 168°) .. .. ,,	3	5	0
,, (,, 150°) .. .. ,,	1	5	0
,, (free from arsenic, 145°) .. .. .. ,,	1	6	0
Sulphurous (solution) .. .. ,,	2	15	0
Tannic (pure) .. .. per lb.	0	1	2
Tartaric .. .. ,,	0	0	11¾
Arsenic, white powdered .. .. nett per ton	11	15	0
Alum (loose lump) .. .. ,,	5	5	0
Alumina Sulphate (pure) .. .. ,,	5	0	0
,, ,, (medium qualities) .. .. .. ,,	4	15	0
Aluminium .. .. per lb. 2s. 8d. to	0	3	2
Ammonia, ·880=28° .. .. per lb.	0	0	3
,, =24° .. .. ,,	0	0	1¾
,, Carbonate .. .. nett ,,	0	0	3¼
,, Muriate .. .. per ton	21	0	0
,, ,, (sal-ammoniac) 1st & 2nd .. per cwt.	35/- & 33/-		
,, Nitrate .. .. per ton	38	10	0
,, Phosphate .. .. per lb.	0	0	10½
,, Sulphate (grey) London .. .. .. per ton	9	17	6
,, ,, (grey) Hull .. .. ,,	9	15	0
Aniline Oil (pure) .. .. per lb.	0	0	7
Aniline Salt ,, ... ,,	0	0	6½
Antimony .. .. per ton	45	10	0
,, (tartar emetic) .. .. per lb.	0	1	0
,, (golden sulphide) .. .. ,,	0	0	10
Barium Chloride .. .. per ton	7	10	0
,, Carbonate (native) .. .. ,,	3	10	0
,, Sulphate (native levigated) .. .. .. ,,	45/- to 75/-		
Bleaching Powder, 35 % .. .. nett ,,	7	10	0
,, Liquor, 7 % .. .. ,,	2	10	0
Bisulphide of Carbon .. .. ,,	11	15	0
Chromium Acetate (crystal) .. .. per lb.	0	0	6
Calcium Chloride .. .. per ton	2	5	0
China Clay (at Runcorn) in bulk .. .. .. ,,	17/6 to 35/-		
Coal Tar Dyes:—			
Alizarine (artificial) 20 % .. .. per lb.	0	0	8¼
Magenta .. .. ,,	0	3	9
Coal Tar Products			
Anthracene, 30 % A, f.o.b. London .. per unit per cwt.	0	0	10½
Benzol, 90 % nominal .. .. .. per gallon	0	1	9
,, 50/90 ,, ... ,,	0	1	4½
Carbolic Acid (crystallised 40°) .. .. .. per lb.	0	0	4⅞
,, (crude 60°) .. .. per gallon	0	1	2
Creosote (ordinary) .. .. ,,	0	0	1
,, (filtered for Lucigen light) .. .. ,,	0	0	2
Crude Naphtha 30 % @ 120° C. .. .. .. ,,	0	0	9
Grease Oils, 22° Tw. .. .. per ton	2	2	0
Pitch, f.o.b. Liverpool or Garston .. .. .. ,,	1	8	0
Solvent Naphtha, 90 % at 160° .. .. .. per gallon	0	0	11
Coke-oven Oils (crude) .. .. ,,	0	0	1
Copper .. .. per ton	45	5	0
,, Sulphate .. .. ,,	15	10	0
,, Oxide (copper scales) .. .. ,,	45	0	0
Glycerine (crude) .. .. ,,	13	0	0
,, (distilled S.G. 1250°) .. .. ,,	45	0	0
Iodine .. .. nett, per oz.	0	0	9
Iron Sulphate (copperas) .. .. per ton	1	12	6
,, Sulphide (antimony slag) .. .. ,,	2	0	0
Lead (sheet) for cash .. .. ,,	11	17	6
,, Litharge Flake (ex ship) .. .. ,,	14	0	0
,, Acetate (white ,,) .. .. ,,	25	10	0
,, ,, (brown ,,) .. .. ,,	17	5	0
,, *Carbonate* (white lead) pure .. .. .. ,,	20	0	0
Nitrate .. .. ,,	20	0	0
Lime, Acetate (brown) .. .. per ton	5	17	6
,, ,, (grey) .. .. ,,	10	15	0
Magnesium (ribbon and wire) .. .. per oz.	0	2	3
,, Chloride (ex ship) .. .. per ton	2	7	6
,, Carbonate .. .. per cwt.	1	17	6
,, Hydrate .. .. per ton.	17	0	0
,, Sulphate (Epsom Salts) .. .. .. per ton	2	19	0
Manganese, Sulphate .. .. ,,	17	15	0
,, Borate .. .. per cwt.	2	12	6
,, Ore, 70 % .. .. per ton	4	5	0
Methylated Spirit, 61° O.P. .. .. per gallon	0	2	6
Naphtha (Wood), Solvent .. .. ,,	0	4	6
,, ,, Miscible, 60° O.P. .. .. .. ,,	0	4	3
Oils:—			
Cotton-seed .. .. per ton	19	15	0
Linseed .. .. ,,	20	5	0
Lubricating, Scotch, 890°—895° .. .. .. ,,	7	5	0
Petroleum, Russian .. .. per gallon	0	0	4½
,, American .. .. ,,	0	0	5½
Potassium (metal) .. .. per oz.	0	3	7
,, Bichromate .. .. nett per lb.	0	0	4½
,, Carbonate, 90% (ex ship) .. .. .. per ton	18	0	0
,, Chlorate .. .. per lb.	0	0	7
,, Cyanide, 98% .. .. ,,	0	2	2
,, Hydrate (Caustic Potash) 80/85 % .. per ton	22	10	0
,, ,, (Caustic Potash) 75/80 % .. ,,	21	10	0
,, ,, (Caustic Potash) 70/75 % .. ,,	20	15	0
,, Nitrate (refined) .. .. per cwt.	1	2	6
,, Permanganate .. .. per cwt.	3	10	0
,, Prussiate Yellow .. .. per lb.	0	0	9½
,, Sulphate, 90 % (ex ship) .. .. .. per ton	9	15	0
,, Muriate, 80 % (do.) .. .. .. ,,	7	17	6
Silver (metal) .. .. per oz.	0	3	3½
,, Nitrate .. .. ,,	0	2	10
Sodium (metal) .. .. per lb.	0	3	4
,, Carb. (refined Soda-ash) 48 % .. nett per ton	6	2	6
,, ,, (Caustic Soda-ash) 48 % .. ,, ,,	5	5	0
,, ,, (Carb. Soda-ash) 48% .. .. ,, ,,	5	7	6
,, ,, (Carb. Soda-ash) 58 % .. .. ,, ,,	6	5	0
,, ,, (Soda Crystals) .. .. .. ,, ,,	3	9	0
,, Acetate (ex-ship) .. .. ,,	16	5	0
,, Arseniate, 45 % .. .. ,,	11	0	0
,, Chlorate .. .. per lb.	0	0	8
,, Borate (Borax) .. .. nett, per ton.	29	0	0
,, Bichromate .. .. ,, per lb.	0	0	3¼
,, Hydrate (77 % Caustic Soda) (f.o.b.) nett pr. ton (10 ton lots)	11	15	0
,, ,, (74 % Caustic Soda) ,, ,, ,, (10 ton lots)	11	5	0
,, ,, (70 % Caustic Soda) ,, ,, ,, (10 ton lots)	10	5	0
,, ,, (60 % Caustic Soda) .. ,, ,, (10 ton lots)	9	2	6
,, ,, (60 % Caustic Soda, cream) (f.o.b.) ,, (10 ton lots)	8	17	6
,, Bicarbonate .. .. ,,	6	12	6
,, Hyposulphite .. .. ,,	7	15	0
,, Manganate, 25% .. .. ,,	11	10	0
,, Nitrate (95 %) ex-ship Liverpool .. .. per cwt.	0	8	0
,, Nitrite, 98 % .. .. per ton	30	0	0
,, Phosphate .. .. ,,	15	10	0
,, Prussiate .. .. per lb.	0	0	7¾
,, Silicate (glass) .. .. per ton	5	7	6
,, ,, (liquid, 100° Tw.) .. .. .. ,,	4	5	0
,, Stannate, 40 % .. .. per cwt.	3	5	0
,, Sulphate (Salt-cake) .. .. per ton.	1	16	6
,, ,, (Glauber's Salts) .. .. ,,	1	15	0
,, Sulphide .. .. ,,	7	15	0
,, Sulphite .. .. ,,	6	12	6
Strontium Hydrate, 100% .. .. ,,	8	10	0
Sulphocyanide Ammonium, 95 % .. .. per lb.	0	0	7½
,, Barium, 95 % .. .. ,,	0	0	5
,, Potassium .. .. ,,	0	0	7¾
Sulphur (Flowers) .. .. per ton.	8	0	0
,, (Roll Brimstone) .. .. ,,	6	5	0
,, Brimstone: Best Quality (nominal) .. ,,	5	0	0
Superphosphate of Lime (26 %) .. .. ,,	2	7	6
Tallow .. .. ,,	27	0	0
Tin (English Ingots) .. .. ,,	103	0	0
,, Crystals .. .. per lb.	0	0	7
Zinc (Spelter) .. .. per ton	22	0	0
,, Chloride (solution, 96° Tw.) .. .. .. ,,	10	6	0

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TAR AND AMMONIACAL LIQUOR.

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Miscellaneous.

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AS A COMPLETE GOING CONCERN,
TUESDAY, 16th FEBRUARY, 1892,
AT THE MART, TOKENHOUSE YARD, LONDON, E.C.

Re L. COWAN & SONS, LIMITED, in liquidation, Hammersmith Bridge Soap Works, Barnes, London, S.W.

WHEATLEY, KIRK, PRICE, & GOULTY

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PLAIN AND TUBULATED.
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nts, Colours, Chemical Precipitates,

White Lead, Minerals, Artificial

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Tenders.

THE Corporation of Middleton are prepared to receive TENDERS for the supply of the SULPHURIC ACID required at the Gas-Works during the ensuing year.

Further particulars may be obtained from Mr. Duxbury, Gas Manager.

The Corporation do not bind themselves to accept the lowest or any tender.

Tenders, addressed to the Chairman of the Gas Committee, to be delivered at my Office on or before Wednesday, the 17th day of February, 1892, endorsed "Tender for Sulphuric Acid."

FREDERICK ENTWISTLE,
Town Clerk.

Town Hall, Middleton,
Near Manchester, Jan. 22, 1892.

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Manager and Engineer.

The Gas Works,
Burton-on-Trent,
February 12th, 1892.

Miscellaneous.

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AS A COMPLETE GOING CONCERN,

TUESDAY, 1st MARCH, 1892.

AT THE MART, TOKENHOUSE YARD, LONDON, E.C.

Re L. COWAN & SONS, LIMITED, in liquidation, Hammersmith Bridge Soap Works, Barnes, London, S.W.

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Are instructed by the Liquidator, J. MILTON BROAD, Esq., to sell by PUBLIC AUCTION, on Tuesday, 1st March, 1892, at the MART, TOKENHOUSE YARD, LONDON, E.C., at Half-past Two o'clock in the afternoon, the valuable and old established Soap Works, with the portion of Freehold Land, comprising about 4½ acres, as shown on Block Plan and described in Schedule, AS A GOING CONCERN, together with the Plant and Machinery, Motive Power, Railway Wagons, Horses and Carts, Wharf with frontage to River Thames of 150 feet, with the extensive, old established, and valuable Trade Connections.

The Plant and Machinery comprise 3 Lancashire Steam Boilers, 7 ft. diameter, 30 ft. long; 1 Lancashire Steam Boiler, 6 ft. diameter, 26 ft. long; High Pressure Beam Engine, 15 in. cylinder, 30 in. stroke; 2 double acting Beam Pumping Engines, 18 in. buckets; Hot Steam Engine, 6 in. cylinder, 12 in. stroke; 9 Boiling Pans, 7 ft. 9 in. diameter, 11 ft. deep, with pumps, shafting, and piping; Tanks; 100 large Soap Block Moulds; large quantity of Wood Moulds; 7 Hand Tablet Presses; 2 Steam ditto.; Pressing Dies; Drying Rooms; Store Cupboards; 3 Bar Cutting Machines; Tablet Cutting Machine; Weighing Machines; Contents of Laboratory; 3 Horses and Carts; 2 Railway Wagons; Railway, Office Furniture, &c. Further particulars, with Schedule and Plan, may be obtained from the Liquidator, J. Milton Broad, Esq., 1, Walbrook, London, E.C.; or from WHEATLEY, KIRK, PRICE, & GOULTY, 52, QUEEN VICTORIA STREET, LONDON, E.C., and Albert Square, Manchester.

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Further particulars may be obtained from Mr. J. E. Lamb, Manager, Gas Office, Altrincham.

Sealed Tenders to be sent to the undersigned, marked "Tender for Tar," by twelve o'clock on the morning of Wednesday, March 9th, 1892.

F. R. B. LINDSELL,
Secretary.

Gas Office, Altrincham,
20th February, 1892.

Miscellaneous.

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J. R. SMITH,
Clerk to the Board.

Local Board Offices,
Padiham,
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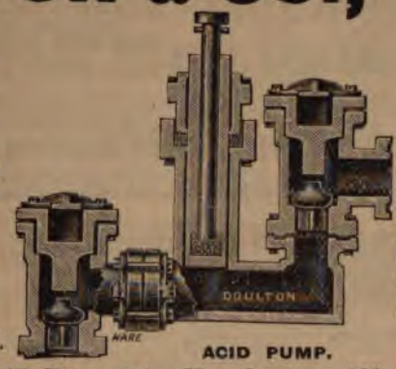

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THE Gas Committee of the Bury Corporation are prepared to receive Tenders for the supply of about 300 tons of Sulphuric Acid for the manufacture of Sulphate of Ammonia, for a period of one year from the 1st May, 1892. Form of Tender and conditions may be obtained upon application to the undersigned.

Tenders to be endorsed "Tender for Sulphuric Acid," to be sent to J. Haslam, Esq., Town Clerk, Bury, on or before the 26th inst.

By Order,
W. H. S. GENDALL,
Engineer and Manager.

Gas Works, Elton, Bury,
April 13th, 1892.

BUXTON LOCAL BOARD.—The Buxton Local Board INVITE TENDERS for the PURCHASE of the Surplus TAR and LIQUOR produced at their works in Ashwood Dale for one, two, or three years, commencing from the 30th of June next. Further particulars and forms of tender to be obtained of Mr. G. Smedley, Gas Office, Buxton. Tenders endorsed "Tender for Tar and Liquor," to be addressed to the Chairman of the Gas Committee, and delivered not later than noon on the 18th day of May. The Board do not bind themselves to accept the highest or any tender.—By order, JOSIAH TAYLOR, Clerk.

Miscellaneous.

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Specification and Form of Tender may be obtained on application to Mr. John Snowdon, Permanent Way Storekeeper, Central Station, Newcastle-on-Tyne.

Sealed Tenders, marked "Tender for Creosote Oil," must be sent to the Secretary, at York, not later than noon on Wednesday, the 4th May.

The Directors do not bind themselves to accept the lowest or any tender.

C. N. WILKINSON,
SECRETARY.

York, 26th April, 1892.

BUXTON LOCAL BOARD.

THE Buxton Local Board invite TENDERS for the PURCHASE of the Surplus TAR and LIQUOR produced at their works in Ashwood Dale for one, two, or three years, commencing from the 30th of June next.

Further particulars and forms of tender to be obtained of Mr. G. Smedley, Gas Office, Buxton.

Tenders endorsed "Tender for Tar and Liquor," to be addressed to the Chairman of the Gas Committee, and delivered not later than noon on the 18th day of May.

The Board do not bind themselves to accept the highest or any tender.

By order,
JOSIAH TAYLOR, Clerk.

TO TAR DISTILLERS.

THE Directors of the Ashton Gas Company invite Tenders for the purchase of the Surplus Tar that will be produced at their works during a period of twelve months commencing the first day of August next.

Any further information required can be obtained on application to the undersigned, to whom sealed and endorsed Tenders must be delivered not later than 12 o'clock at noon on Monday, the 16th day of May next.

DAVID CLARKE.

Gas Offices, Ashton-under-Lyne,
27th April, 1892.

Miscellaneous.

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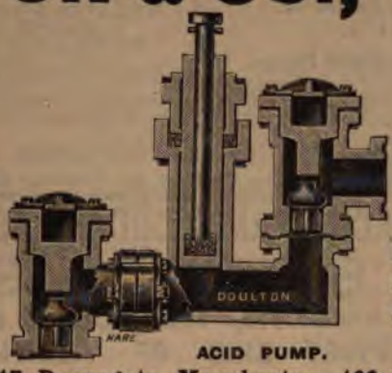

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TENDERS FOR TAR AND AMMONIACAL LIQUOR.

THE Directors invite Tenders for the purchase of the Tar and Ammoniacal Liquor which may be produced at their Accrington and Great Harwood Works during a period of one year, commencing on the 1st of July next.

The quantity will be about 1,300 tons of Tar, and 3,000 tons of Liquor (10-oz.).

Tenders, addressed to the Chairman, Offices of the Company, St. James's St., Accrington, must be in my hands not later than Wednesday, the 8th of June.

By order,
CHAS. HARRISON,
Secretary and Manager.

TO TAR DISTILLERS.

THE Directors of the Ashton Gas Company invite Tenders for the purchase of the Surplus Tar that will be produced at their works during a period of twelve months commencing the first day of August next.

Any further information required can be obtained on application to the undersigned, to whom sealed and endorsed Tenders must be delivered not later than 12 o'clock at noon on Monday, the 16th day of May next.

DAVID CLARKE.

Gas Offices, Ashton-under-Lyne,
27th April, 1892.

TO MANUFACTURING CHEMISTS AND OTHERS.

THE London County Council is prepared to receive Tenders for the supply of 5,000 tons of Proto-sulphate of Iron.

The Specification, Form of Tender, and other particulars may be obtained on application to the Chemist of the Council, at the Offices, 40, Craven-street, W.C., until Monday, the 16th of May, 1892. Tenders must be addressed to the Clerk of the London County Council, Spring Gardens, London, S.W., and must be endorsed "Tender for Proto-sulphate of Iron," and be sent in not later than 10 o'clock on Tuesday morning, the 17th May, 1892.

Persons tendering will be required to declare in their Tenders that they pay such rates of wages and observe such hours of labour as are generally accepted as fair in the trade.

The Council does not bind itself to accept the lowest or any Tender.

H. DE LA HOOKE,
Clerk of the Council.

Spring Gardens, S.W.,
27th April, 1892.

Miscellaneous.

☞ **Replies to Advertisements addressed to the "Chemical Trade Journal" Office are forwarded to Advertisers, post free, on the day of their receipt.**

TO BE SOLD, about 4¼ acres of Freehold Land at Bagillt, Flintshire, and a one-third undivided interest in an adjoining wharf. The land is specially suitable for Chemical Works, as it actually adjoins the Chester and Holyhead Railway (from which a siding could be constructed at small expense) and the Bettisfield Colliery. A moderate price would be taken. Apply to H. C. Carver, 3, Cross-st., Manchester.

WANTED, a Traveller with good connection among chemical manufacturers, to introduce an important mechanical apparatus, to be taken in conjunction with his present engagement; one who takes the northern districts preferred. Address X Y Z, *Chemical Trade Journal* office, stating terms with references and experience.

FOR Sale, Two Second-hand Double Acting Horizontal Air Compressors. Air cylinder, 12 in. diameter, two steam cylinders, 10 in. diameter. Apply L 150 *Chemical Trade Journal* office.

WORKS Chemist, 24, desires situation as Head or Assistant. Well up in all mineral analyses. Quick and accurate analyst. Excellent references. D.W., 19, Blandford-st., Manchester-square, London, W.

CHEMICALS and Phosphates.—An Experienced Manager in above seeks re-engagement. Will be at liberty soon. Address M 20, care of C. Birchall, advertisement contractor, Liverpool.

Miscellaneous.—Cont.

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FOR SALE, on very advantageous terms, an India Rubber Manufactory, on the Continent. Excellent position. Fine establishment. Hydraulic power: and all appliances connected with the manufacture of Rubber Goods.—For particulars, apply to A 136, *Chemical Trade Journal* office.

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CHEMIST (Analytical), F.I.C., (by exam.), F.C.S. &c., desires engagement. Competent to undertake any kind of analytical or assay work. Just returned from 6 years' Foreign appointment. Apply B 150, *Chemical Trade Journal* office.

SECOND-HAND Beer Hogsheads and Barrels for sale cheap. Campbell & Swainston Ltd., Argyll Wharf, Limehouse, London, E.

PACKING TIERCES for Sale, all sizes, cheap. Campbell & Swainston, Ltd., Argyll Wharf, Limehouse, London, E.

GOOD Second-hand Rum Puncheons for sale, cheap. Apply to Campbell & Swainston, Argyll Wharf, Thomas-street, Limehouse, London, E.

AMMONIA, all qualities and strengths. Enquiries solicited.
BROTHERTON & Co., Leeds and Wakefield.

TO BE SOLD, the LANCASHIRE MANURE COMPANY'S WORKS at Widnes with Machinery and 24,420 square yards of Freehold Land.—Address J. Hosking, 16, Fenwick Street, Liverpool. [169

SULPHATE OF AMMONIA STILL for Sale. Still, Heater, Lime Tank, Lime Pump, and Regulating Valves complete. Capacity, one ton of sulphate per week. Apply Alpha, *Chemical Trade Journal* office, 32, Blackfriars-street, Manchester.

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PRACTICAL Chemist with a little capital, required to take charge of small well established Factory, near London. Address with full particulars, and amount of capital atdisposal F.I.C., F.C.S., 124, Eglinton-road, Plumstead, London, S.E.

TO CHEMICAL Manufacturers and others.—TO BE SOLD, with immediate possession, Valuable Freehold and Leasehold Property, situate at Widnes, in the County of Lancaster, on the bank of the St. Helens Canal, with siding from the London and North-Western Railway, lately in the occupation of the Widnes Limestone Company, together with the Steam Engines, Boilers, Steam Cranes, Edge Runners, Stone Breakers, Lathe, Tools, Waggons, and other Plant. Apply to Langton and M'Connal, Chartered Accountants, 22, Lord-street, Liverpool.

REFRIGERATORS for Sale.—Two of Lawrence's, second-hand, cheap; one to cool 250 gallons, £14.; one to cool 170 gallons, £5. Can be seen at our shops. Andrews & Harlock, Engineers and Coppersmiths, 24, Gray's Inn-road, London, W.C.

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TAR AND AMMONIACAL LIQUOR.

THE Lymm Local Board are prepared to receive TENDERS for the purchase of the surplus TAR and AMMONIACAL LIQUOR made at their gas works, for a term of one year from the First day of July, 1892 (or for such longer term as may be contracted for with consent of the Board).

Tar and Liquor will be delivered free in contractor's boat on the Bridgewater Canal. Tenders to be sent to the undersigned on or before the 28th day of May, 1892, endorsed "Tar."

The purchaser will have to enter into a contract, form of which can be seen at the Board Office any Tuesday or Friday, between the hours of 10 and 12 a.m. and 2 and 5 p.m. The Board do not bind themselves to accept the highest or any tender. The Board have no special form of tender. Further particulars can be had of the Gas Manager, Mr. W. Severs.

W. MULLARD,
Clerk to the Board.

Local Board Offices, Lymm,
May 7th, 1892.

LEEK IMPROVEMENT ACT, 1855.

TO TAR DISTILLERS AND OTHERS.

TENDERS are invited for the purchase of the surplus Gas Tar produced at the Leek Gas Works, for One, Two, or Three years from the 1st of July next, 1892, at per ton of 2240 lbs. at such works.

Endorsed tenders, addressed to the Chairman of the Gas Committee, to be delivered at the Town Hall, Leek, by four o'clock in the afternoon of Monday, 23rd of May instant.

Forms of Tender and further particulars may be obtained from the undersigned.

The highest or any tender will not necessarily be accepted.

By order of the Commissioners,
C. HENSHAW, Clerk

Town Hall, Leek,
5th May, 1892.

ACCRINGTON GAS AND WATER WORKS COMPANY.

TENDERS FOR TAR AND AMMONIACAL LIQUOR.

THE Directors invite Tenders for the purchase of the Tar and Ammoniacal Liquor which may be produced at their Accrington and Great Harwood Works during a period of one year, commencing on the 1st of July next.

The quantity will be about 1,300 tons of Tar, and 3,000 tons of Liquor (10-oz.).

Tenders, addressed to the Chairman, Offices of the Company, St. James's St., Accrington, must be in my hands not later than Wednesday, the 8th of June.

By order,
CHAS. HARRISON,
Secretary and Manager.

Miscellaneous.

TO BE LET, CLIPPENS OIL-WORKS, Johnstone, near Glasgow. Those central, commodious, and well-equipped works (which have hitherto been used as an oil refinery), extending to about 43 acres, which area may be curtailed to suit offerers. The buildings, which are of brick, consist of oil refinery and adjuncts, mechanic's, blacksmith's and cooperage shops; and the plant comprises steam rollers, pipes throughout the works, hydraulic presses and pumps, filter presses, tanks, engines, etc. There is an excellent supply of gravitation water, and a thorough system of drainage. The manager's house is large and substantial, and there are also foremen's and workmen's houses capable of accommodating a large staff of men. The ground and works are admirably adapted for an extensive iron and steel or engineering business, being within a few miles by road or rail of the Clyde shipbuilding yards and shipping ports, while both the Caledonian and Glasgow and South-Western Railway Companies have sidings into the works.—For particulars and orders to view the works apply to HOLMES, MACTAVISH, AND FULLERTON, writers, Johnstone, and 128, St. Vincent-street, Glasgow.

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WANTED, an Engagement to assist in the erection of simple PLANT for the manufacture of SULPHATE of AMMONIA and SULPHURIC ACID, and to work the same. Experience 27 years Address S. J. GOWERS, 4, Crosby-road, Romford-road, Stratford, London, E.

TO BE SOLD, about 4¼ acres of Freehold Land at Bagillt, Flintshire, and a one third undivided interest in an adjoining wharf. The land is specially suitable for Chemical Works, as it actually adjoins the Chester and Holyhead Railway (from which a siding could be constructed at small expense) and the Bettisfield Colliery. A moderate price would be taken. Apply to H. C. Carver, 3, Cross-st., Manchester.

Miscellaneous.—Cont.

WANTED, four second-hand egg end Boiler Tanks, about 30 ft. long by 8 ft. diam. When quoting, give dimensions, &c., and lowest prices free on rails. Thomas Owen & Co. Ltd., Ely Paper Works, Cardiff.

WANTED, Workman, young and intelligent, with knowledge of manufacture of Muriate of Ammonia, all grades. State age, wages and references to D 154, *Chemical Trade Journal* office.

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POST Wanted, general factory experience, chemical and mechanical, control of skilled and other male and female labour; or would engage with view to superintend erection of apparatus, exhibits or sales at Chicago. Energetic and reliable, with tact, resource, and thorough grasp of new subjects. Address V., 18, Noll-street, London, N.

FOR SALE, Copper Melting Pan, 5 ft. 9 in. diameter by 2 ft. 4 in. deep, with cast iron jacket, can be seen at W. J. Fraser & Co., Chemical Engineers, Commercial Road E., London.

YOUNG Man desires Situation in Chemical Works, Laboratory or otherwise. Three years' college training in Chemistry Physics, and Practical Mechanics. Has some knowledge of French and German, and writes shorthand. Address E 155, *Chemical Trade Journal* ffice.

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TO CHEMICAL Manufacturers and others.—TO BE SOLD, with immediate possession, Valuable Freehold and Leasehold Property, situate at Widnes, in the County of Lancaster, on the bank of the St. Helens Canal, with siding from the London and North-Western Railway, lately in the occupation of the Widnes Limestone Company, together with the Steam Engines, Boilers, Steam Cranes, Edge Runners, Stone Breakers, Lathe, Tools, Waggons, and other Plant. Apply to Langton and M'Connal, Chartered Accountants, 22, Lord-street, Liverpool.

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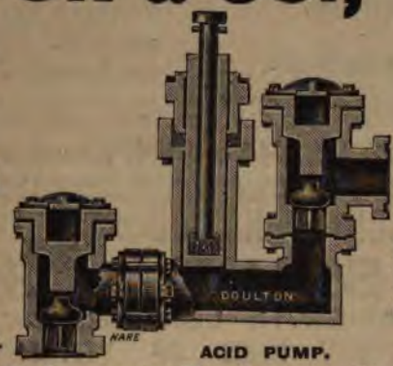

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Tenders.

MANCHESTER CORPORATION GASWORKS.

SPENT OXIDE.

THE Gas Committee of the Corporation of Manchester are prepared to RECEIVE TENDERS for the Purchase and Removal of the SPENT OXIDE to be produced at their Gaythorn, Rochdale-road, and Bradford-road Works during a period of one, two, or three years from the 30th June next. The Committee do not bind themselves to accept the highest or any tender.

Sealed tenders, addressed to the Chairman of the Gas Committee, and endorsed "Tender for Spent Oxide," must be delivered at the offices of the Gas Department, Town Hall, on or before Thursday, the 2nd day of June next.

Forms of tender and further particulars may be obtained on application in writing to Mr. Charles Nickson, Superintendent of the Gas Department.

By order of the Gas Committee,
WM. HENRY TALBOT,
Town Clerk.

Town Hall, 13th May, 1892.

THE SHREWSBURY GAS LIGHT COMPANY.

DISPOSAL OF SURPLUS TAR.

THE Directors of the above Company are desirous of receiving TENDERS for the purchase of the surplus TAR made at their Works during the Year commencing July 1st, 1892.

The estimated quantity for disposal is about 950 tons per annum.

Tenders must be made on Forms (containing further particulars) which may be obtained on application at the Company's Works, or by post, and must be sent in to the undersigned not later than the 17th day of June, 1892.

The Directors do not bind themselves to accept the highest or any Tender.

By order,
WM. BELTON, A.M.I.C.E.,
Secretary and Manager.

Gas Works, Shrewsbury,
18th May, 1892.

TO TAR DISTILLERS AND MANUFACTURING CHEMISTS.

THE Directors of the Wellington (Salop) Coal and Gas Light Co. invite TENDERS for the purchase of the surplus TAR to be produced at their Works during one year from the 1st of June next.

Particulars may be obtained from the undersigned, to whom tenders should be sent on or before May 28th.

JNO. C. BELTON,
Manager.

Gas Office, Market Street,
Wellington, Salop, May 13th, 1892.

STEAM PUMPS.

THE Brighouse Local Board are prepared to receive Designs and Tenders for the supply of three Steam Pumps, delivered and fixed at their Gas Works, Brighouse.

Particulars can be obtained on application to the undersigned.

Sealed tenders, addressed to Frederick Laxton, Esq., Chairman of the Local Board, Public Offices, Brighouse, are to be sent in on or before Tuesday, the 31st day of May, 1892, endorsed on the outside "Tender for Steam Pumps."

The Board do not bind themselves to accept the lowest or any tender.

By order,
JAMES PARKINSON,
Engineer.

Public Offices, Brighouse,
May 14th, 1892.

TAR AND AMMONIACAL LIQUOR.

THE Lymm Local Board are prepared to receive TENDERS for the purchase of the surplus TAR and AMMONIACAL LIQUOR made at their gas works, for a term of one year from the First day of July, 1892 (or for such longer term as may be contracted for with consent of the Board).

Tar and Liquor will be delivered free in contractor's boat on the Bridgewater Canal. Tenders to be sent to the undersigned on or before the 28th day of May, 1892, endorsed "Tar."

The purchaser will have to enter into a contract, form of which can be seen at the Board Office any Tuesday or Friday, between the hours of 10 and 12 a.m. and 2 and 5 p.m. The Board do not bind themselves to accept the highest or any tender. The Board have no special form of tender. Further particulars can be had of the Gas Manager, Mr. W. Severs.

W. MULLARD,
Clerk to the Board.

Local Board Offices, Lymm,
May 7th, 1892.

Miscellaneous.—Cont.

EXPERIENCED CHEMIST and Assayer (F.I.C.) disengaged. Thorough practical knowledge of manufacture of Leblanc and Ammonia Soda, Vitriol, Bleach, Copper and Silver Extraction.—Manures and Soap.—Address, "Chemicus," *Chemical Trade Journal* Office.

WANTED, a Traveller with good connection among chemical manufacturers, to introduce an important mechanical apparatus, to be taken in conjunction with his present engagement; one who takes the northern districts preferred. Address X Y Z, *Chemical Trade Journal* office, stating terms with references and experience.

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BURNER FRONTS for Pyrites Kilns. A few required second-hand in good condition.—Address with full particulars, "Sulphur," *Chemical Trade Journal* Office.

WANTED to purchase Witherite in lumps, of finest selected quality, and high percentage. Wanted in regular supplies of about a truck load at a time. Offers to Ch. F., *Chemical Trade Journal* Office.

SECOND-HAND Beer Hogsheads and Barrels for sale cheap. Campbell & Swainston Ltd., Argyll Wharf, Limehouse, London, E.

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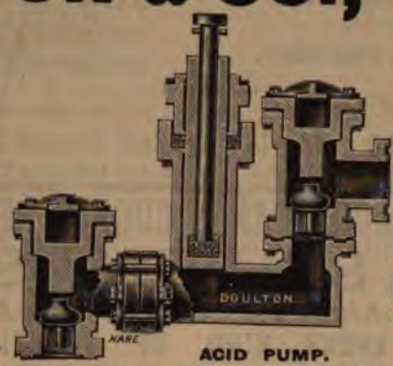

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Miscellaneous.—Cont.

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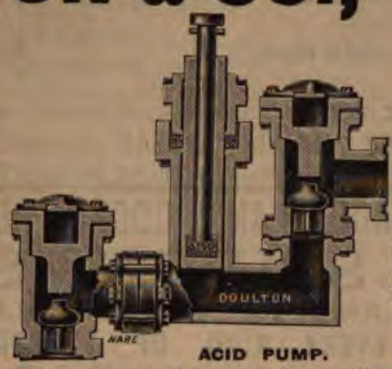

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TAR AND AMMOMMIA WATER

THE Directors of the Loughborough Gas Company are prepared to receive TENDERS for the surplus TAR and AMMONIA WATER to be produced at their works for one year, from the 30th day of June, 1892.

The estimated quantity will be about 400 tons of Tar and 900 tons of Ammonia Water.

The tar and liquor to be delivered into the contractor's boats, at the wharf on the Derby-road, Loughborough.

The strength of the liquor to be tested by Twaddel's hydrometer (tempr. 60°), and the Tender to state the price per ton commencing at 4 degrees up to 8 degrees.

The boats for the removal of the Tar and Ammonia Water to be sent at such times as may be required.

Payments, 10th of following month.

Further information may be obtained on application to the undersigned, to whom Tenders, in accordance with this advertisement, must be sent not later than the 21st of June.

The directors do not bind themselves to accept the highest or any Tender.

J. B. BALL, C.E.,
Manager.

Loughborough, June 2nd, 1892.

CITY OF CARLISLE.

TAR CONTRACT.

THE Carlisle Gas Committee are prepared to receive TENDERS for the SURPLUS TAR to be produced at their Works, for a period of One or more years from the 30th of June next.

Any further particulars required can be obtained upon application to the Engineer, to whom sealed Tenders, endorsed "Tender for Tar," must be delivered on or before July 5th, 1892.

The Committee do not bind themselves to accept the highest or any tender.

J. HEPWORTH, Engineer.

The Gas Works, Carlisle,
June 8th, 1892.

RADCLIFFE AND PILKINGTON GAS CO.

TO TAR DISTILLERS.

THE Directors of this Company invite TENDERS for the purchase of 700 tons of the surplus TAR now in stock and to be produced at their Works in Radcliffe during the ensuing year.

Particulars may be obtained from the undersigned, to whom endorsed tenders must be delivered not later than Thursday, the 30th inst.

JAMES BRADDOCK,
Manager and Secretary.

Gas Works, Radcliffe,
June 7th, 1892.

AMMONIACAL LIQUOR.

THE Directors of the Ashton Gas Company invite TENDERS for the AMMONIACAL LIQUOR that will be produced at their works during a period of twelve months commencing the first day of August next.

Estimated quantity, 620,000 gallons of 6 deg. Twaddel.

Any further information required can be obtained on application to the undersigned, to whom sealed and endorsed tenders must be delivered before 12 o'clock at noon on Monday, the 20th inst.

D. CLARKE, Manager.

Gas Offices, Ashton-under-Lyne,
7th June, 1892.

THE SUTTON, SOUTHCOATES, & DRYPOOL GAS COMPANY, HULL.

THE Sutton, Southcoates, and Drypool Gas Company, Hull, invite TENDERS for the Surplus TAR; also the whole of the AMMONIACAL LIQUOR produced at their Works at per ton over the Company's machine from the 1st July, 1892, to 30th June, 1893, both inclusive.

Probable quantity of Tar, 700 tons.

Probable quantity of Ammoniacal Liquor, 900 tons.

Both Tar and Ammoniacal Liquor to be taken from the Company's elevated Tank into contractor's carts or casks, which must be supplied as required by Vendors.

Tenders for Ammoniacal Liquor must state price per degree Twaddel's Hydrometer from 4 to 8 degrees.

Further particulars may be obtained of the Manager the Gas Works, St. Mark's Street.

Tenders to be sent to the undersigned, on or before the 24th June, 1892, endorsed "Tender for Tar or Liquor."

The Company do not bind themselves to accept the highest or any Tender.

DAVID WOOD, Secretary.

Offices: St. Mark's Street,
Hull, 14th June, 1892.

Miscellaneous.

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TIPTON GASWORKS.

TENDERS FOR TAR.

THE Gas Committee of the Tipton Local Board invite TENDERS for the purchase of the surplus TAR produced at the above works during a period of one, two, or three years, from 1st July next.

Particulars may be obtained at the Gasworks on application to Mr. Vincent Hughes, the Engineer and Manager.

The Tar may be delivered either into Boats or on Rail (L. and N. W. Railway) as may be required.

Sealed and endorsed tenders to be sent to me, the undersigned, not later than 10 a.m. on Friday, 24th inst.

The Committee do not bind themselves to accept the highest or any tender.

By Order,
GEO. M. WARING, Clerk to the Board.

Public Offices, Tipton,
9th June, 1892.

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Tenders.

CITY OF CARLISLE.

TAR CONTRACT.

THE Carlisle Gas Committee are prepared to receive TENDERS for the SURPLUS TAR to be produced at their Works, for a period of One or more years from the 30th of June next.

Any further particulars required can be obtained upon application to the Engineer, to whom sealed Tenders, endorsed "Tender for Tar," must be delivered on or before July 5th, 1892.

The Committee do not bind themselves to accept the highest or any tender.

J. HEPWORTH, Engineer.

The Gas Works, Carlisle,
June 8th, 1892.

RADCLIFFE AND PILKINGTON GAS CO.

TO TAR DISTILLERS.

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JAMES BRADDOCK,
Manager and Secretary.

Gas Works, Radcliffe,
June 7th, 1892.

CITY OF HEREFORD.

TO TAR DISTILLERS AND OTHERS.

THE Gas Management Committee of the Corporation invite TENDERS for the surplus TAR produced at their Works for a term of One year, from the 1st July next.

Particulars and printed Form of Tender may be obtained on application to the undersigned.

Tenders, endorsed "Tender for Tar," are to be sent in, addressed to the Chairman of the Gas Management Committee, Mansion House, Hereford, by Saturday, July 2nd.

The Committee do not bind themselves to accept the highest or any tender.

By order,
WILLIAM PARLBY,
Gas Engineer and Manager.

Gas Works, Hereford,
June 9th, 1892.

Miscellaneous.

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WANTED, one or two Commissions in Chemicals for Liverpool and district and principal towns in Ireland, where advertiser has good connection.—Address, H164, *Chemical Trade Journal* Office.

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WANTED, the names of makers of Gas Compressing Plant.—Apply, XX, *Chemical Trade Journal* Office.

TO be Sold cheap, a No. 3 Devil Disintegrator, by Hardy Patent Pick Co.; has been but little used.—Apply Geo. Adlam and Sons, Bristol.

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£20 GIVEN to person obtaining advertiser good appointment as Analytical Chemist in Works or Laboratory. Advertiser is a F.I.C. and F.C.S., and can do any kind of analytical work. Address B 167, *Chemical Trade Journal* office.

WANTED to purchase Witherite in lumps, of finest selected quality, and high per centage. Wanted in regular supplies of about a truck load at a time. Offers to Ch. F., *Chemical Trade Journal* Office.

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AMMONIA, all qualities and strengths. Enquiries solicited.
BROTHERTON & Co., Leeds and Wakefield.

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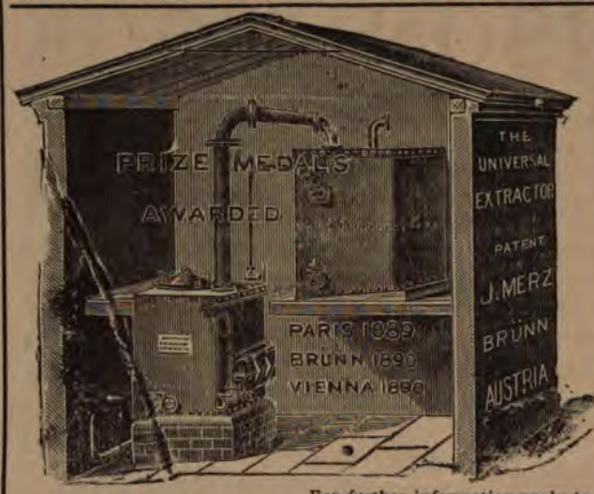

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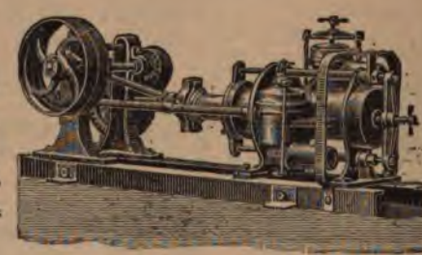

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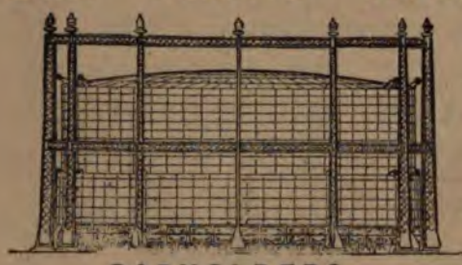

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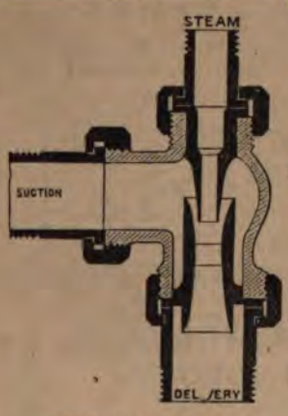

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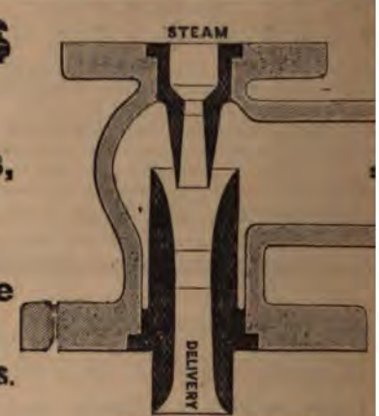

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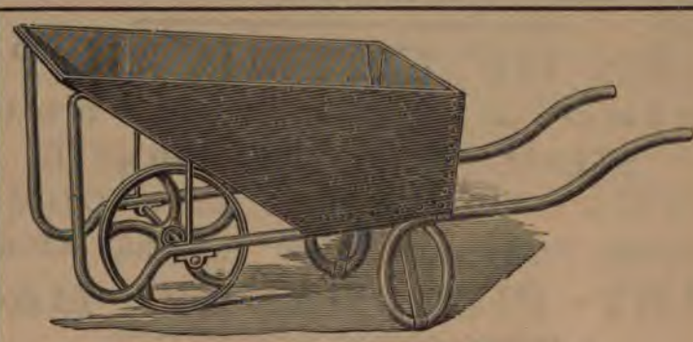

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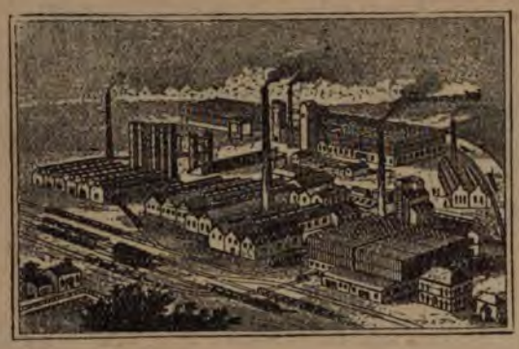

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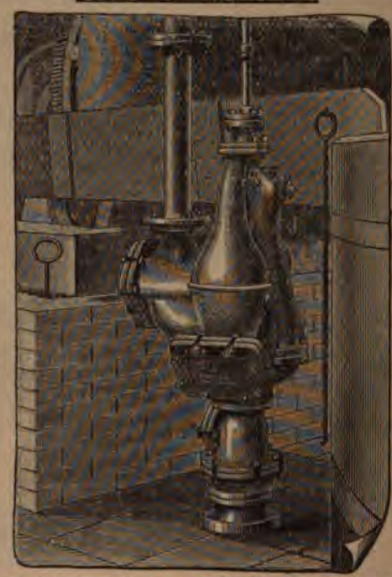

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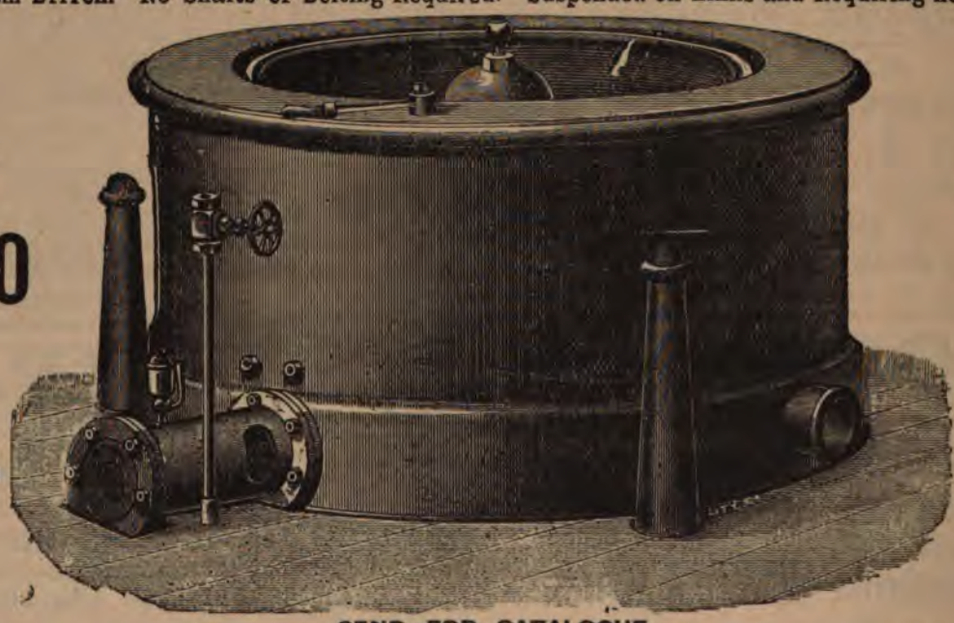

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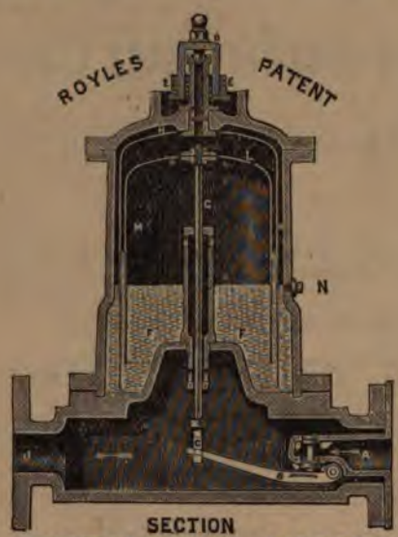

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